55-1520-240-T-3/990

TECHNICAL MANUAL

AVIATION UNIT AND AVIATION INTERMEDIATE TROUBLESHOOTING MANUAL CH-47D HELICOPTER

This copy is a reprint which includes current pages from Changes 1 through 9.

HEADQUARTERS, DEPARTMENT OF THE ARMY
10 MAY 1983

D101-11

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 1 November 1989

CHANGE NO. 9

Aviation Unit and Aviation Intermediate
Troubleshooting Manual

CH-47D HELICOPTER

TM 55-1520-240-T-3, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
v through vii/viii	v through viii
10-2.5 and 10-2.6	10-2.5 and 10-2.6
10-35 and 10-36	10-35 and 10-36
10-66.1/10-66.2	10-66.1/10-66.2
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16-75 and 16-76	16-75 and 16-76
16-97 and 16-98	16-97 and 16-98

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Troubleshooting Manual

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Remove pages	Insert pages
i through iii/vi	i through iii/vi
v and vi	v and vi
15-2.1 through 15-2.6	-----
15-3 through 15-6	15-3 through 15-5/15-6
15-7 through 15-40	15-7 through 15-40
-----	15-41 through 15-144
Index 1 through Index 8	Index 1 through Index 8
-----	Index 9/Index 10

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Remove pages	Insert pages
vii/viii	vii and viii
10-15 and 10-16	10-15 and 10-16
10-29 and 10-30	10-29 and 10-30
10-46.1/(10-46.2 Blank)	10-46.1/(10-46.2 Blank)
10-50.1/(10-50.2 Blank)	10-50.1/(10-50.2 Blank)
10-52.1/(10-52.2 Blank)	10-52.1/(10-52.2 Blank)
11-37 and 11-38	11-37 and 11-38
11-219 and 11-220	11-219 and 11-220
14-15 and 14-16	14-15 and 14-16
15-7 and 15-8	15-7 and 15-8
15-10	15-10
15-11 and 15-12	15-11 and 15-12
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15-19 through 15-32	15-19 through 15-32
15-34	15-34
15-37 through 15-40	15-37 through 15-40
Index-1 and Index-2	Index-1 and Index-2

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Troubleshooting Manual

CH-47D HELICOPTER

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Remove pages	Insert pages
vii/viii	vii/viii
10-91 and 10-92	10-91 and 10-92
10-95 and 10-96	10-95 and 10-96
10-99 and 10-100	10-99 and 10-100
10-111 and 10-112	10-111 and 10-112
10-117 and 10-118	10-117 and 10-118
10-123 and 10-124	10-123 and 10-124
10-131 through 10-140	10-131 through 10-140
10-143 and 10-144	10-143 and 10-144
10-149 and 10-150	10-149 and 10-150
10-155 through 10-160	10-155 through 10-160
10-167 through 10-172	10-167 through 10-172
10-177/10-178	10-177/10-178
11-5 through 11-7/11-8	11-5 through 11-7/11-8
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11-63 through 11-66	11-63 through 11-66
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11-107 and 11-108	11-107 and 11-108
11-111 through 11-114	11-111 through 11-114
11-140.2	11-140.2
11-141 and 11-142	11-141 and 11-142
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11-175 and 11-176	11-175 and 11-176
11-195 and 11-196	11-195 and 11-196
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12-17 and 12-18	12-17 and 12-18
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13-23 and 13-24	13-23 and 13-24
14-19 through 14-22	14-19 through 14-22
14-29 and 14-30	14-29 and 14-30
15-2.1 and 15-2.2	15-2.1 and 15-2.2
15-7 and 15-8	15-7 and 15-8

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C 6

Remove pages	Insert pages
15-37/(15-38 blank)	15-37 and 15-38
16-43 and 16-44	16-43 and 16-44
16-83 and 16-84	16-83 and 16-84
16-86 through 16-88	16-86 through 16-88

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Troubleshooting Manual

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vii/(viii)	vii/(viii)
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Index 5 and Index 6	Index 5 and Index 6

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CHANGE NO. 4

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Troubleshooting Manual

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Troubleshooting Manual

CH-47D HELICOPTER

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i through iii/iv	i through iii/iv
v and vi	v and vi
---	vii/viii
10-2.3 through 10-2.7/10-2.8	10-2.3 through 10-2.7/10-2.8
---	10-2.9 and 10-2.10
10-3 and 10-4	10-3 and 10-4
10-35 through 10-40	10-35 through 10-40
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---	10-44.1/10-44.2
10-46	10-45 and 10-46
---	10-46.1/10-46.2
10-47 and 10-48	10-47 and 10-48
---	10-48.1/10-48.2
10-49 and 10-50	10-49 and 10-50
---	10-50.1/10-50.2
10-51 and 10-52	10-51 and 10-52
---	10-52.1/10-52.2
10-53 through 10-62	10-53 through 10-62
---	10-62.1/10-62.2
10-63 and 10-64	10-63 and 10-64
---	10-64.1/10-64.2
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10-109 and 10-110	10-109 and 10-110
10-115 and 10-116	10-115 and 10-116
10-125 through 10-128	10-125 through 10-128
10-131 and 10-132	10-131 and 10-132
10-147 and 10-148	10-147 and 10-148
10-163 and 10-164	10-163 and 10-164
10-173 and 10-174	10-173 and 10-174
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11-2.4.1 through 11-2.4.4	11-2.4.1 through 11-2.4.4
11-2.5 and 11-2.6	11-2.5 and 11-2.6
11-9 and 11-10	11-9 and 11-10
11-35 through 11-42	11-35 through 11-42
---	11-42.1 through 11-42.8/ 11-42.9
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11-43 and 11-44	11-43 and 11-44
11-67 and 11-68	11-67 and 11-68
11-87 through 11-90	11-87 through 11-90
11-111 through 11-114	11-111 through 11-114
11-163 through 11-166	11-163 through 11-166
11-171 through 11-174	11-171 through 11-174
11-183 and 11-184	11-183 and 11-184
11-187 and 11-188	11-187 and 11-188
12-2.1 through 12-2.4	12-2.1 through 12-2.4
13-2.1 through 13-2.4	13-2.1 through 13-2.4
13-3 and 13-4	13-3 and 13-4
14-2.1 and 14-2.2	-2.1 and 14-2.2
14-3 and 14-4	14-3 and 14-4
15-2.1 through 15-2.4	15-2.1 through 15-2.4
15-5 and 15-6	15-5 and 15-6
15-13 and 15-14	15-13 and 15-14
16-1/16-2	16-1/16-2
16-2.1 through 16-2.6	16-2.1 through 16-2.6
16-5 and 16-6	16-5 and 16-6
16-31 and 16-32	16-31 and 16-32
16-75 and 16-76	16-75 and 16-76
16-99 through 16-107/16-108	16-99 through 16-107/16-108
17-2.1 and 17-2.2	17-2.1 and 17-2.2
17-2.5 and 17-2.6	17-2.5 and 17-2.6
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17-16 through 17-19/17-20	17-16 through 17-19/17-20

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TM 55-1520-240-T-3
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Aviation Unit and Aviation Intermediate
Troubleshooting Manual

CH-47D HELICOPTER

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10-59 through 10-62	10-59 through 10-62
10-75 through 10-84	10-75 through 10-84
10-87 and 10-88	10-87 and 10-88
10-91 and 10-92	10-91 and 10-92
10-95 and 10-96	10-95 and 10-96
10-99 and 10-100	10-99 and 10-100
10-105 and 10-106	10-105 and 10-106
10-111 and 10-112	10-111 and 10-112
10-117 and 10-118	10-117 and 10-118
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10-128	10-127 and 10-128
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10-153 and 10-154	10-154
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	11-2.4.1 through 11-2.4.4
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11-135 through 11-138	11-135 through 11-138
	11-140.2
11-141 and 11-142	11-141 and 11-142
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15-31 and 15-32	15-31 and 15-32
16-2.1 and 16-2.2	16-2.1 and 16-2.2
16-5 and 16-6	16-5 and 16-6
16-15 and 16-16	16-15 and 16-16
16-43 and 16-44	16-43 and 16-44
16-47 and 16-48	16-47 and 16-48
16-51 and 16-52	16-51 and 16-52
16-55 and 16-56	16-55 and 16-56
16-59 and 16-60	16-59 and 16-60
16-65 through 16-68	16-65 through 16-68
16-75 and 16-76	16-75 and 16-76
16-79 through 16-82	16-79 through 16-82
16-91 through 16-95/16-96	16-91 through 16-96
	16-97 through 16-107/16-108
17-2.1 and 17-2.2	17-2.1 and 17-2.2
17-2.5 and 17-2.6	17-2.5 and 17-2.6
17-3 through 17-6	17-3 through 17-6
17-9 and 17-10	17-9 and 17-10
	17-16 through 17-19/17-20

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TM 55-1520-240-T-3
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TM 55-1520-240-T-3
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CHANGE NO. 1

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WASHINGTON, D.C., 23 July 1984

Aviation Unit and Aviation Intermediate
Troubleshooting Manual

CH-47D HELICOPTER

TM 55-1520-240-T, 10 May 1983, is changed as follows:

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Remove pages	Insert pages
11-43 and 11-44	11-43 and 11-44
11-65 and 11-66	11-65 and 11-66

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WARNING AND FIRST AID DATA.

Warnings, cautions, and notes emphasize important critical instructions. They are defined as follows:

WARNING

An operating procedure or practice which, if not correctly followed, will result in personnel injury or loss of life.

CAUTION

An operating procedure or practice which, if not strictly observed, will result in damage or destruction of equipment.

NOTE

An operating procedure or condition which it is essential to highlight.

Personnel performing instructions involving operations, procedures, materials, and practices which are included or implied in this technical manual shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury or death. Refer to FM 21-11 for first aid data to treat injuries resulting from working on the helicopter.

Dangerous Static Charges. Ground the helicopter during parking, fueling, or defueling.

Dangerous Voltages Exist in the Electronic Equipment. Be careful when working on the 150- and 300-volt dc circuits and on the ac generator 115- and 200 volt ac outputs.

Dangerous Voltages may Exist at Antenna Terminals. Be careful when working near the antenna or the antenna terminals. Radio-frequency (rf) high voltages exist at these points when transmitters are operating. Contact with radiating antennas can cause serious rf burns.

Poisonous Carbon Monoxide Fumes. Toxic carbon monoxide fumes may be present inside the helicopter whenever the apu or engines are operating with the cargo ramp open. Ventilate the cockpit.

Dangerous Fuel Handling. Incorrect fuel handling causes fire hazards. Ground the helicopter when fueling or defueling.

Corrosive Battery Electrolyte (Potassium Hydroxide). Wear rubber gloves, apron, and face shield when handling leaking batteries. If potassium hydroxide is spilled on clothing, or other material wash immediately with clean water. If personnal contact is made, immediately start flushing the affected area with clean water. Continue washing until medical assistance arrives.

Acids and Alkalines. Do not add water to acids. A violent action will result. Acids should be added to water in small quantities. Ruststripper is an alkaline solution. Avoid contact with the skin. Wear protective clothing. Wash thoroughly after using.

Solvent and Cleaning Solutions. These materials are generally toxic and many (toluene, benzene, xylene, methyl-ethyl-ketone, perchlorethylene, naphtha, trichloroethylene) are highly flammable. Work in a well ventilated area away from open flames. Avoid inhaling fumes and prolonged contact with the skin. Wear protective clothing and goggles. Wash thoroughly after using.

Windshield Repellant. Do not let windshield rain repellant contact open flame. Deadly hydrogen fluoride gas could be generated. Wash hands with soap and water after handling repellant.

Antiseize Compounds. Some antiseize compounds are irritants. Avoid inhaling fumes and contact with the skin. Wear protective clothing. Wash thoroughly after using.

Paints, Varnishes, Dopes, Thinners, Lubricants, and Fuels. These materials are generally highly flammable and may be irritants. Work in a well ventilated area away from open flames. Avoid inhaling fumes and prolonged contact with the skin. Wash thoroughly after using.

Epoxy Resins, Cements, and Adhesives. These materials may contain toxic or irritating substances. They may also be flammable. Work in a well ventilated area away from open flames. Wear protective clothing. Avoid contact with the skin. Wash thoroughly after using.

Radiation Hazard. Some instruments contain radioactive material. (See TB 55-1500-314-25.) Do not try to disassemble these instruments. They present no radiation hazard unless seal is broken. If you think seal is broken, do not remove instrument from aircraft until you consult Base Radioactive Protection Officer (AR 40-15). Use a beta-gamma radiac meter AN/PDR-27 or equivalent to determine if instrument contains radioactive material (radium).

Fire Extinguishing Agents. Avoid repeated or prolonged exposure to high concentration of bromochloromethane (CB) or decomposition products. CB is a narcotic agent of moderate intensity but prolonged duration. It is less toxic than carbon tetrachloride, methylbromide, or products of combustion. Take normal precautions while using bromochloromethane. Use oxygen masks when available.

Monobromotrifluoromethane (CF_3Br) is highly volatile but is not easily detected by its odor. Although nontoxic, it is about the same as other freons and carbon dioxide, causing danger to personnel primarily by reduction of oxygen available for proper breathing. Do not allow the liquid to come into contact with your skin. It may cause frostbite or low temperature burns.

Noise. Sound pressure levels in this aircraft during some operating conditions exceed the Surgeon General's hearing conservation criteria, as defined in TB MED 251. Hearing protection devices, such as the aviator helmet or ear plugs, are required to be worn by all personnel in and around the aircraft during its operation.

FOD. Make sure area is clear of foreign objects before closing access doors, panels, and fairings. If the area is not cleared, damage to components and systems could result in personal injury or death.

Hydraulic Pressures. High pressures used in testing hydraulic components can cause line rupture or component failure. Only qualified personnel shall operate, service and maintain hydraulic test equipment. Use heavy plastic shielding, 1/2-inch thickness or more, when applying pressures over 250 psi, to prevent injury to personnel.

Compressed Air. Do not use more than 30 psi compressed air for cleaning purposes. Debris trajected under pressure can cause injury to eyes. Use source of compressed air under 30 psi and eye protection to prevent injury to personnel.

Flare Dispenser. Remove all power from helicopter before installing loaded payload module on dispenser assembly. Keep hands and face away from end of payload module during installation. Flares can accidentally fire, sometimes from stray voltage, resulting in injury or death.

TECHNICAL MANUAL
NO. 55-1520-240-T

TM 55-1520-240-T

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 MAY 1983

Aviation Unit and Aviation Intermediate
Troubleshooting Manual

CH-47D HELICOPTER

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, USAAVSCOM, ATTN: AMSAV-MMD 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

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HOW TO USE THIS MANUAL (TM 55-1520-240-T)

This manual has 17 Chapters that have instructions for troubleshooting 72 CH-47 Helicopter Systems.

Chapter 1 has:

- The Complete List of Troubleshooting Symptoms you will find in this manual. This list outlines each chapter by system and symptom.
- Complete wiring for 300 Series Connectors and Receptacles, Terminal Boards, and Ground Devices.

Chapters 2 thru 17 have sets of troubleshooting instructions that include:

- **A Chapter outline** of all systems and symptoms found in the beginning of each Chapter.
- **Connector part numbers and pin patterns** for each connector and receptacle in systems contained in chapter. Also included are **relay termination views** and **ground termination types** and **location**.
- **System Component Diagrams**
- **System Block Diagrams**
- **System Schematics, Ladder Schematics and Wiring Diagrams**
- **Fuel Piping Diagrams**
- **Hydraulic Piping Diagrams**
- **Tables**
- **Visual Checks** with locator figures and step by step procedures.
- **Operational Checks** with locator figures and step by step procedures.
- **Fault Isolation Procedures** with locator figures and troubleshooting logic for specific system faults.

HOW TO FIND WHAT YOU NEED

Maintenance—Refer to TM 55-1520-240-23.

Troubleshooting—Use the index in Chapter 1 or in the beginning of each chapter. This is where you will find the system troubleshooting procedures (visual checks, operational checks and fault isolation procedures).

1. The troubleshooting procedures are listed under the name of the system that the component or system belongs to.
2. Each system has a number:
   Example:

System No.	System
9-15	Cabin and Ramp Lights

3. Each item in your set of troubleshooting instructions has a task number. The system number is prefixed to each of the item task numbers.
   Example:

System No.	System Symptom	Task No.
9-15	Cabin and Ramp Lights	
	Wiring Diagram	9-15.1
	Visual Check	9-15.2
	Operational Check	9-15.3
	Cabin and Ramp Circuit Breaker Does not Stay Closed	9-15.4

TASK PREPARATION

Each Troubleshooting procedure begins with INITIAL SETUP information. Read it carefully before starting. It tells you what you need and what you have to know before you begin the job.

1. **Applicable Configurations.** Tells you what configurations or effectivity the task applies to.
2. **Tools.** If any tools from your tool kit are needed, just the kit is listed. Tools needed that are not in the kit are called for by name. Special ground support tools, containers, and test equipment are listed by tool number (Txx). Find these items in TM 55-1520-240-23.
3. **Materials.** Materials needed are listed by expendable number (EXX). Find these items in TM 55-1520-240-23.
4. **Parts.** New parts required, such as gaskets, packings, and washers, are listed by name only. If parts are not needed, you will not see this heading.
5. **Personnel Required.** Each MOS needed to do the task is listed. When more than one of any MOS is needed, the number is shown in parentheses.
6. **References.** Lists references such as TM 55-1520-240-23. These references will provide where information can be found when you need to repair or replace a part or component. When more than one reference is listed, the Fault Isolation Procedure blocks will contain a refer to statement for all references other than TM 55-1520-240-23.
7. **Equipment Condition.** Procedures which must be done before starting the task are listed and task or TM number is given. Tasks that are not indented under a TM manual can be found in this manual. Refer to the TM manual listed above the indented tasks.
8. **General Safety Instructions.** These are safety precautions that must be observed throughout task. Warnings include basic first aid instructions.
9. **Locator Figure.** The area of the helicopter where the task will be performed is shown, with components to be worked on called out.

TASK PERFORMANCE

1. Visual Checks are performed to determine if the cause of the system fault is visually apparent.
2. Operational Checks are performed step by step on the system to determine the system fault. Continue the operational check TASK until the symptom is confirmed in the RESULT column.
3. Fault Isolation Procedures are performed to identify the specific trouble in the system. Start with the first block. Read it through and answer the question. The questions will always have a YES or NO answer. If you answer the question YES, follow the direction of the YES arrow to the next block. If you answer the question NO, follow the direction of the NO arrow to the next block. Continue troubleshooting until the symptom cause is identified.
4. Use the integrated schematic during troubleshooting for a view of system component connections and system interfaces.
5. Use the wiring diagram when the troubleshooting instructions require wire tests to isolate the symptom cause.

GO TO NEXT PAGE

6. Before starting, read the entire task. Familiarize yourself with the entire procedure before beginning the task.
7. As you read, pay attention to **WARNINGS, CAUTIONS,** and **NOTES**.
8. **When the word INSPECT** is in your procedures, an inspector must ok the completed step(s).
9. Major steps and key words are printed in **boldface** for experienced repairers.
10. A glossary is on page 1-87. It lists the abbreviations, special words and terms used in this manual and gives their meaning.
11. When a special tool is used or a common tool is used in an unusual way, the use of the tool will be shown.
12. When a block states, "Repair or replace wire as required.", refer to TM 55-1500-323-24 for recommended maintenance practices.
13. Voltages specified in blocks are nominal values unless a range is given. These nominal values and their acceptable ranges are as follows:

Nominal voltage	Range
28 VDC	24 to 30
26 VAC	24 to 28
24 VDC (Battery)	20 to 24
5 VAC	4 to 6
115 VAC	110 to 120

14. In the event of the necessity to add or replace electrical wiring, the colors of wire received from supply may not be the same as the original wire colors. Use wire numbers only for identification of wires. Tag or identify wires by proper number when disconnecting or replacing.

AIRCRAFT MODIFICATION (ECP/MWO) RETROFIT INFORMATION

Throughout this manual, black squares containing white numerals are used to distinguish information relating to helicopters modified by an MWO or ECP. Refer to Helicopter Configuration Legend on the following pages for specific modification and effectivities relating to each numeral. A list of delivered helicopters serial numbers is included with the legend.

Information pertaining only to unmodified helicopters is identified by the appropriate effectivity symbol preceded by WITHOUT. For example, WITHOUT 4 indicates that the information that follows is applicable only to helicopters **not** modified by ECP DO18. Information pertaining only to helicopters that have been modified by ECP DO18 is preceded by WITH 4. All information not preceded by an effectivity symbol is common to all helicopters.

The following helicopter Designation Legend pages are solely for user convenience. They have no official status.

DELIVERED HELICOPTER SERIAL NUMBERS

81-23382	82-23762	83-24102	84-24152	85-24322
through	through	through	through	through
81-23389	82-23780	83-24125	84-24187	85-24336

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HELICOPTER CONFIGURATION LEGEND

CODE	ECP/MWO NO.	TITLE	EFFECTIVITY PRODUCTION (Serial Number)	EFFECTIVITY RETROFIT
1	ECP DO03R1	Improved Synch Shaft Vibration Mount	84-24156	Attrition
2	ECP DO10R2C1	Fuel Cell Manifold Control Bracket	82-23764	Spares & Future 82-23381 thru 82-23763
3	ECP DO08	Rotor Hub Protective Cover Enlargement	85-24322	83-24121
4	ECP DO18	Composite Fuel Pods	84-24162	Attrition
5	ECP DO06	Removable Support Structure Pylon Hyd. Module	81-23385	By Kit all D
6	ECP DO37R2	Shorter 114C1014 Yaw Connecting Link	85-24322	Attrition
7	ECP DO34	Pilot and Co-Pilot Seat Armor	81-23386 through 81-23389 No action for 81-23382 through 81-23385	None
8	ECP DO42	Redesign Link Assy for Increased Parked Blade Loads	83-24105	Attrition
9	ECP DO48	Flare Dispenser Blanket Mod and Stowage Provision	83-24107	None
10	ECP DO61R	Floor Former/Fuselage Bilge Paint (Special paint for 14 aircraft)	83-24107 through 83-24118 (Interior) 83-24105 through 83-24118 (Exterior)	None
11	ECP DO65	Second Source 114PS494 Fuel Shutoff Valve (Motorized)	82-23776	Attrition
12	ECP DO71	2-Inch Dia. Fuel Breakaway Fittings	83-24110	Attrition
13	ECP DO74C1	Install Steel Control Rods Aft Pylon	83-24103	81-23381 thru 83-24102 by Tech Bulletin
14	ECP DO15C2	Install Bubble Windows	85-24322	Recommended
15	ECP DO51	Rainshield Redesign	84-24158	None
16	ECP DO75	Heater Modification	85-24322	Attrition
17	ECP DO27R1C1	Night Vision Goggles (NVG)	85-24322	MWO
18	ECP DO36	Improved N1 System	85-24322	Attrition
19	ECP DO69R1	Ferry Fuel Provisions	85-24322	MWO
20	ECP DO64R1	Aft Pylon Work Platform Redesign	85-24322	Retrofit
21	ECP DO29	Ilca Actuator and Manifold Seal Change	85-24322	Next Overhaul
22	ECP DO60	Ramp Skin and Ramp End Former	85-24322	None
23	ECP DO01	Improved N2 Control Box	84-24156	Attrition
24	ECP DO56	Redesign Droop Stop Arm to Increase Clearance With Shroud; Modify Spring Limiter	85-24322	Attrition
25	ECP DO81	Ground Contact Annunciator	87-0069	Attrition
26	ECP D118	Improved Heat Resistance of Flight Control System Bellcranks and Connecting Rods	85-24353	MWO
27	ECP DO54	Combining Transmission Support Fitting Redesign	84-24154	Attrition
28	ECP D126C1	Accumulator, APU/Flight Control Modules	86-1635	Attrition
29	ECP DO85C1	Reduced Length Servo-Cylinder Safety Blocks		
30	ECP 712R7	Portable Calculator and Hardware for Vibrex	N/A	None
31	ECP D108	Aft Transmission Torque Reactor Improvement	N/A	None
32	ECP D111	Deletion of KY-28 Secure Voice Control Panel	87-0069	None

GO TO NEXT PAGE

HELICOPTER CONFIGURATION LEGEND (Continued)

CODE	ECP/MWO NO.	TITLE	EFFECTIVITY PRODUCTION (Serial Number)	EFFECTIVITY RETROFIT
33	ECP D133	UH60/CH47D Common APU	86-1650	MWO
34	ECP D122	Change Droop Stop Shroud From Installed to Flyaway Equipment	85-24361	Retrofit
35	ECP DO16	Single Handle Cargo Hook Release System	88-	MWO
36	ECP D113	Hook Release Button Ring Guard on Cyclic Grip	88-	MWO

END OF TASK

CHAPTER 10

FUEL SYSTEMS TROUBLESHOOTING

CHAPTER 10
FUEL SYSTEMS TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 10 contains procedures for Fuel Systems troubleshooting. Each fuel system and failure symptom is listed below. Included in this chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for Fuel System.

Refer to TM 55-1520-240-23 for required Fuel System maintenance procedures.

SYSTEM	PARA
ENGINE FUEL SHUTOFF AND CROSS-FEED VALVES	10-1
FUEL BOOST PUMPS	10-2
SINGLE POINT PRESSURE REFUELING	10-3

FAILURE SYMPTOM LIST
ENGINE FUEL SHUTOFF AND CROSSFEED VALVES

SYMPTOM	TASK
CROSSFEED FUEL VALVE HANDLE IS NOT AT CLSD WITH CROSSFEED FUEL VALVES SWITCH AT CLOSE	10-1.4
CROSSFEED FUEL VALVE HANDLE IS NOT AT OPEN WITH CROSSFEED VALVES SWITCH AT OPEN	10-1.4
CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL	10-1.4
ENGINE FUEL SHUTOFF CIRCUIT BREAKER DOES NOT STAY CLOSED	10-1.4

SYMPTOM	TASK
ENGINE FUEL VALVE HANDLE IS NOT AT OPEN WITH FIRE HANDLE IN	10-1.4
ENGINE FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL	10-1.4
ENGINE FUEL VALVE HANDLE IS NOT AT CLSD WITH FIRE HANDLE PULLED	10-1.4
FUEL XFEED CONT CIRCUIT BREAKER DOES NOT STAY CLOSED	10-1.4
LEFT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST	10-1.4

SYMPTOM	TASK
NO. 1 ENGINE FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST	10-1.4
NO. 2 ENGINE FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST	10-1.4
RIGHT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST	10-1.4

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CHAPTER 10
FUEL SYSTEMS TROUBLESHOOTING
CHAPTER OVERVIEW
FAILURE SYMPTOM LIST (Continued)

FUEL BOOST PUMPS

SYMPTOM	TASK
LH FUEL PUMP AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMPS AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMP CONT AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMPS CONT AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMP CONT MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMP CONT MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMPS MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
LH FUEL PUMPS MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
L FUEL PRESS CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN AFT FUEL PUMP SWITCH IS SET TO ON	10-2.3
L FUEL PRESS CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN FWD FUEL PUMP SWITCH IS SET TO ON	10-2.3
L OR R FUEL PRESS CAPSULE IS NOT ON	10-2.3
LEFT OR RIGHT SIDE AUX PRESS LIGHT DOES COME ON WHEN PRESSED TO TEST	10-2.3
LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AUX AFT FUEL PUMP SWITCH IS SET TO ON	10-2.3
LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AUX FWD FUEL PUMP SWITCH IS SET TO ON	10-2.3
R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN AFT FUEL PUMP SWITCH IS SET TO ON	10-2.3
R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN FWD FUEL PUMP SWITCH IS SET TO ON	10-2.3
RH FUEL PUMPS AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMP CONT AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMP CONT AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMPS AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMPS MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMPS MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMP CONT MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RH FUEL PUMP CONT MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED	10-2.3
RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AUX AFT FUEL PUMP SWITCH IS SET TO ON	10-2.3
RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AUX FWD FUEL PUMP SWITCH IS SET TO ON	10-2.3

CHAPTER 10
FUEL SYSTEMS TROUBLESHOOTING
CHAPTER OVERVIEW
FAILURE SYMPTOM LIST (Continued)

SINGLE POINT PRESSURE REFUELING

SYMPTOM	TASK
FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF	10-3.4
FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF	10-3.4
FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED	10-3.4
LH OR RH REFUEL VALVE POSN LIGHT DOES NOT COME ON OR COMES ON AND STAYS ON	10-3.4
LH OR RH REFUEL VALVE POSN LIGHT DOES NOT COME ON WHEN PRESSED	10-3.4
LH OR RH REFUEL VALVE POSN LIGHT IS ON	10-3.4
PWR LIGHT DOES NOT COME ON	10-3.4
REFUEL PANEL FUEL QUANTITY INDICATOR DOES NOT INDICATE FUEL LEVEL	10-3.4
REFUEL PANEL LIGHT DOES NOT COME ON	10-3.4

FUEL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD058		151		492	20	50L
GD109		151		518	10	50R
GD110		151		508	25	50R
GD111		151		492	20	50L
GD147		151		230	-10	50L
GD148		151		230	-10	50L
GD149		151		365	-15	50L
GD150		151		365	-15	50L
GD151		151		230	-5	50L
GD153		151		380	-10	50L
GD154		151		230	-15	50R
GD155		151		230	10	50R
GD156		151		230	-20	50R
GD158		151		365	-15	50R
GD159		151		365	-15	50R
GD160		151		380	-10	50R
GD175		151		340	30	50L
GD176		151		348	10	50R
GD248		151		348	10	50R
GD249		151		348	10	50L
GD265		151		348	32	50L
GD266		151		350	32	50R
TB36			OVERHEAD PANEL COCKPIT			
171K1		108				
171K2		108	IN LH AND RH FUEL CONTROL	345	0	50L
174K1		108	RELAY BOX, 171A1	345	0	50R
174K2		108				
057P4	M83723-75A2025N	153	J1 FUEL QTY SW BOX	232		2
057P6	M83723-75A20257	153	J3 FUEL QTY SW BOX	232		2
057P11	M83723-75A1624N	35	REFUEL PRECHECK PANEL			
171P1	PT06CE-8-3S	12	NO. 1 ENG FUEL PRESS SW	504	10	50L
171P2	PT06CE-8-3S	12	NO. 2 ENG FUEL PRESS SW	504	10	50R
171P3	MS3476W16-26S	24	LH FUEL CONT RELAY BOX, J3	340	8	50L
171P4	MS3476W16-26S	24	RH FUEL CONT RELY BOX, J3	340	8	50R
171P5	MS3476W14-19S	24	LH FUEL CONT RELAY BOX, J5	340	8	50L
171P6	MS3476W14-19S	21	RH FUEL CONT RELAY BOX, J5	340	8	50R
171J7		24	R MAIN AFT FUEL TANK RCPT	375	-15	50R
171J8		24	L MAIN AFT FUEL TANK RCPT	375	-15	50L
172P1	MS3476W14-5S	18	NO. 1 ENG FUEL VALVE	498	10	50L
172P2	MS3476W14-5S	18	NO. 2 ENG FUEL VALVE	498	15	50R
173P1	MS3476W14-5S	18	LH FUEL CROSSFEED VALVE	504	15	50L
173P2	MS3476W14-5S	18	RH FUEL CROSSFEED VALVE	504	15	50R
174P1	MS3476W8-98S	12	LH FWD FUEL PRESS SWITCH	240	-5	54L
174P2	MS3476W8-98S	12	LH AFT FUEL PRESS SWITCH	380	-5	54L
174P3	MS3476W8-98S	12	RH FWD FUEL PRESS SWITCH	240	-5	54R
174P4	MS3476W8-98S	12	RH AFT FUEL PRESS SWITCH	380	-5	54R
174P5	MS3476W14-19P	21	L AUX AFT FUEL TANK PLUG, LH POD	385	-5	52L
174J5		21	L AUX AFT FUEL TANK RCPT	385	-5	52L
174P6	MS3476W14-19P	21	R AUX AFT FUEL TANK PLUG RH POD	385	-5	52R
174J6		21	R AUX AFT FUEL TANK RCPT	385	-5	50R
174P7	MS3476W14-19S	21	LH FUEL PUMP THERMISTER CONT	340	8	50L
174P8	MS3476W14-19S	21	RH FUEL PUMP THERMISTER CONT	340	8	50R
232P1	MS3476W20-41S	26	CTR INSTR PNL, MSTR CAUTION PNL			
300J1		40	NO. 1 PDP			
300P1	M83723-75A2041N	40	NO. 1 PDP			
300J2		42	NO. 1 PDP			
300P2	M83723-75A2255N	42	NO. 1 PDP			
300J4		43	NO. 1 PDP			
300P4	M83723-75A2461N	43	NO. 1 PDP			
300J5		40	NO. 2 PDP			
300P5	M83723-75A2041N	40	NO. 2 PDP			
300J6		43	NO. 2 PDP			
300P6	M83723-75A24616	43	NO. 2 PDP			
300J8		42	NO. 2 PDP			
300P8	M83723-75A2461N	42	NO. 2 PDP			
300J11		42	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300P11	M83723-76A2255N	42	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300J15		43	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300P15	M83723-75A24617	43	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300J18		40	OVERHEAD PANEL, COCKPIT			
300P18	M83723-76A2041N	40	OVERHEAD PANEL, COCKPIT			
300J19		40	OVERHEAD PANEL, COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL, COCKPIT			
300J20		43	OVERHEAD PANEL, COCKPIT			
300P20	M83723-75A2461N	43	OVERHEAD PANEL, COCKPIT			
300J21		43	OVERHEAD PANEL, COCKPIT			
300P21	M83723-75A2461N	43	OVERHEAD PANEL, COCKPIT			
300J34		24	LH FWD FUEL TANK, RCPT	-245	-15	50L
300P34	NO PART NUMBER	24	LH FWD FUEL TANK PLUG — LH POD	-245	-15	52L
300J35		24	LH CABIN, L MAIN TANK RCPT	260	-15	50L
300J36		24	RH FWD AUX FUEL TNK, RCPT	245	-15	50R
300P36	NO PART NUMBER	24	RH FWD AUX FUEL TANK, PLUG, RH POD	245	-15	52R
300J37		24	RH CABIN, R MAIN TANK RCPT	260	-15	50R
300J38		24	LH AFT AUX FUEL TANK, RCPT	380	-15	50L
300P38	NO PART NUMBER	24	LH AFT AUX FUEL TANK, PLUG, LH POD	380	-15	52L

FUEL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
300J39		24	RH AFT AUX FUEL TANK, RCPT	375	-25	50R
300P39	NO PART NUMBER	24	RH AFT AUX FUEL TANK, PLUG, RH POD	375	-25	52R
300J40		34	LH CABIN	222	-5	52L
300P40	M83723-76A1415N	34	LH CABIN	222	-5	52L
300J41		34	RH CABIN	245	-5	52R
300P41	M83723-76A1415N	34	RH CABIN	245	-5	52R
300J45		43	HEATER COMPARTMENT	105	40	30R
300P45	M83723-76A2461N	43	HEATER COMPARTMENT	105	40	30R
300J48		43	ELECTRONICS COMPARTMENT	105	40	20L
300P48	M83723-75A2461N	43	ELECTRONICS COMPARTMENT	105	40	20L
300J51		43	AFT CROWN — OVHD	460	45	20R
300P51	M83723-75A2461N	43	AFT CROWN — OVHD	460	45	20R
300J52		42	AFT CROWN — OVHD	460	45	30L
300P52	M83723-75A2255N	42	AFT CROWN — OVHD	460	45	30L
300J55		42	ELECTRONICS COMPARTMENT	105	40	20L
300P55	M83723-76A2255N	42	ELECTRONICS COMPARTMENT	105	40	20L
300J56		42	HEATER COMPARTMENT	105	40	25R
300P56	M83723-76A2255N	42	HEATER COMPARTMENT	105	40	25R
300J58		42	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300P58	M83723-76A22558	42	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300J61		43	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	
300P61	M83723-76A24619	43	CONSOLE, UNDERFLOOR DISCONNECT	85	-20	

FUEL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

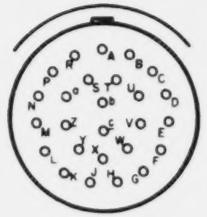
RECEPTACLE

12

PLUG

12

RECEPTACLE



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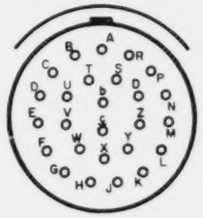

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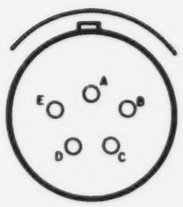

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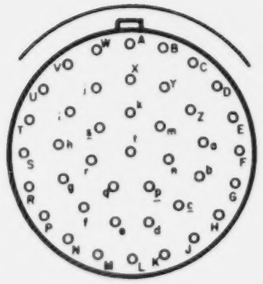

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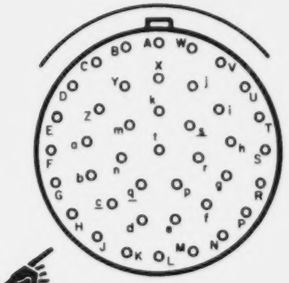

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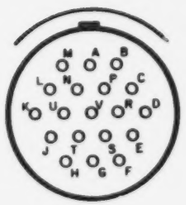

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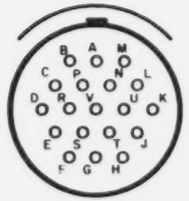

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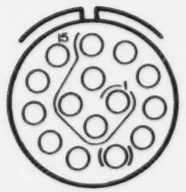

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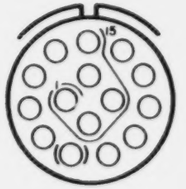

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17317

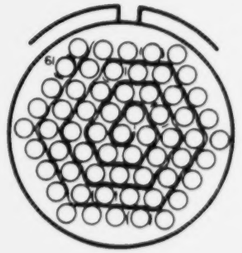
FUEL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

35

PLUG

35



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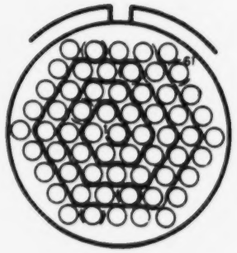

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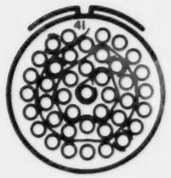

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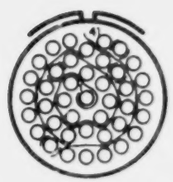

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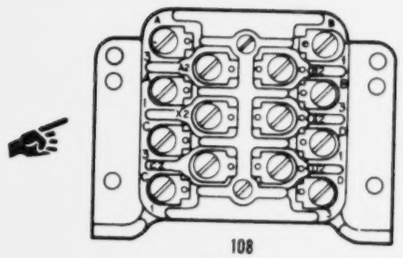
RELAY



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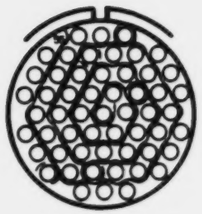
GND STUD

151



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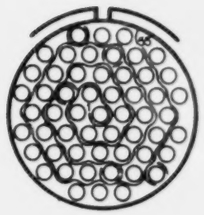

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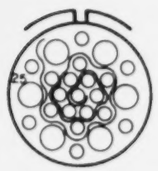

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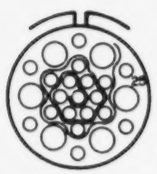
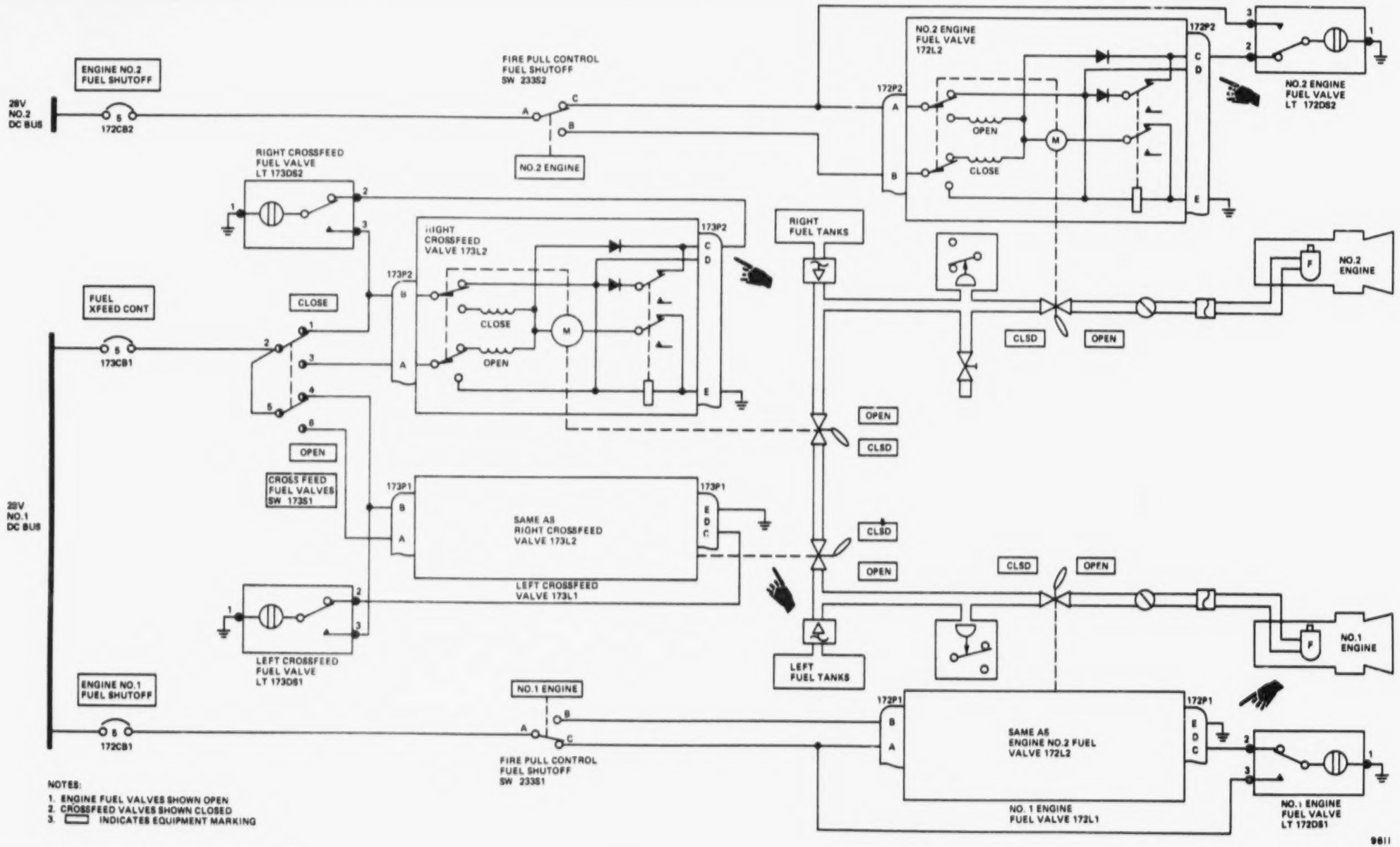


10241

10-1 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES

10-1 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES 10-1

10-1.1 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES SCHEMATIC DIAGRAM 10-1.1



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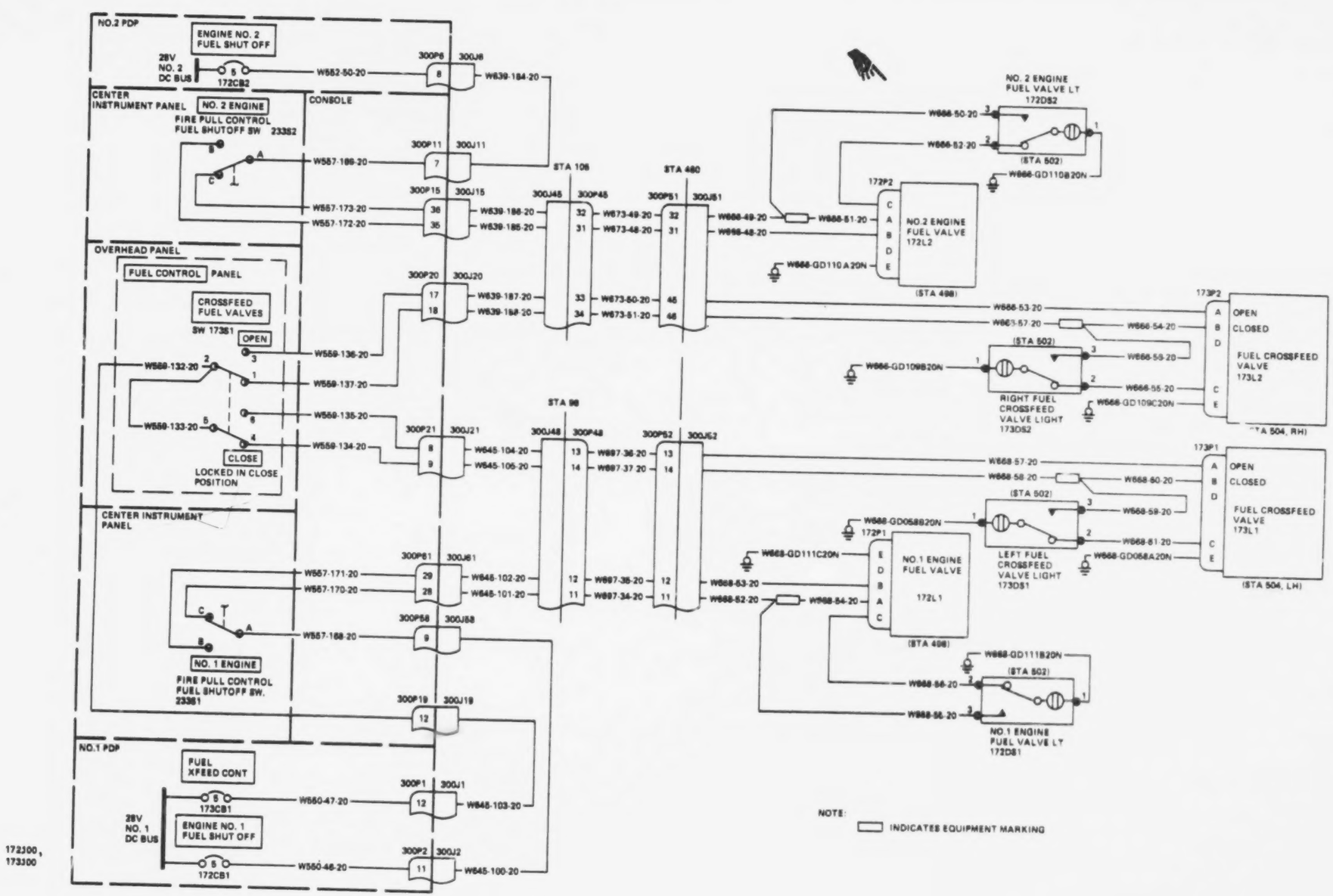

NO.2 PDP
ENGINE NO. 2 FUEL SHUT OFF
28V NO. 2 DC BUS
172CB2
W552-50-20
300P6
300J6
W639-184-20
CENTER INSTRUMENT PANEL
NO. 2 ENGINE FIRE PULL CONTROL FUEL SHUTOFF SW 23382
CONSOLE
W557-169-20
300P11
300J11
W557-173-20
W557-172-20
300P15
300J15
W639-186-20
W639-185-20
OVERHEAD PANEL
FUEL CONTROL PANEL
CROSSFEED FUEL VALVES
SW 17351
OPEN
CLOSE
LOCKED IN CLOSE POSITION
W559-136-20
W559-137-20
W559-135-20
W559-134-20
W559-132-20
W559-133-20
300P20
300J20
W639-187-20
W639-188-20
CENTER INSTRUMENT PANEL
NO. 1 ENGINE FIRE PULL CONTROL FUEL SHUTOFF SW. 23381
W557-171-20
W557-170-20
W557-168-20
300P61
300J61
300P58
300J58
300P19
300J19
NO.1 PDP
FUEL XFEED CONT
173CB1
28V NO. 1 DC BUS
ENGINE NO. 1 FUEL SHUT OFF
172CB1
W560-47-20
W560-46-20
300P1
300J1
300P2
300J2
W645-103-20
W645-100-20
172300, 173300
300P21
300J21
W645-104-20
W645-105-20
W645-102-20
W645-101-20
STA 108
STA 98
300J45
300P45
300J48
300P48
W673-49-20
W673-48-20
W673-50-20
W673-51-20
W697-36-20
W697-37-20
W697-35-20
W697-34-20
STA 480
300P51
300J51
300P52
300J52
W668-49-20
W668-48-20
W668-53-20
W668-52-20
W668-51-20
W668-GD110A20N
172P2
NO.2 ENGINE FUEL VALVE 172L2
(STA 498)
NO. 2 ENGINE FUEL VALVE LT 172DS2
W668-50-20
W668-52-20
(STA 502)
W668-GD110B20N
W668-53-20
W668-57-20
W668-54-20
W668-55-20
W668-GD109B20N
W668-GD109C20N
RIGHT FUEL CROSSFEED VALVE LIGHT 173DS2
173P2
A OPEN
B CLOSED
D
C
E
FUEL CROSSFEED VALVE 173L2
(STA 504, RH)
W668-57-20
W668-58-20
W668-60-20
W668-59-20
W668-61-20
W668-GD058B20N
W668-GD111C20N
W668-GD058A20N
172P1
NO.1 ENGINE FUEL VALVE 172L1
(STA 498)
LEFT FUEL CROSSFEED VALVE LIGHT 173DS1
173P1
FUEL CROSSFEED VALVE 173L1
(STA 504, LH)
W668-GD111B20N
W668-56-20
NO.1 ENGINE FUEL VALVE LT 173DS1
NOTE:
INDICATES EQUIPMENT MARKING
9812

10-1.3 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

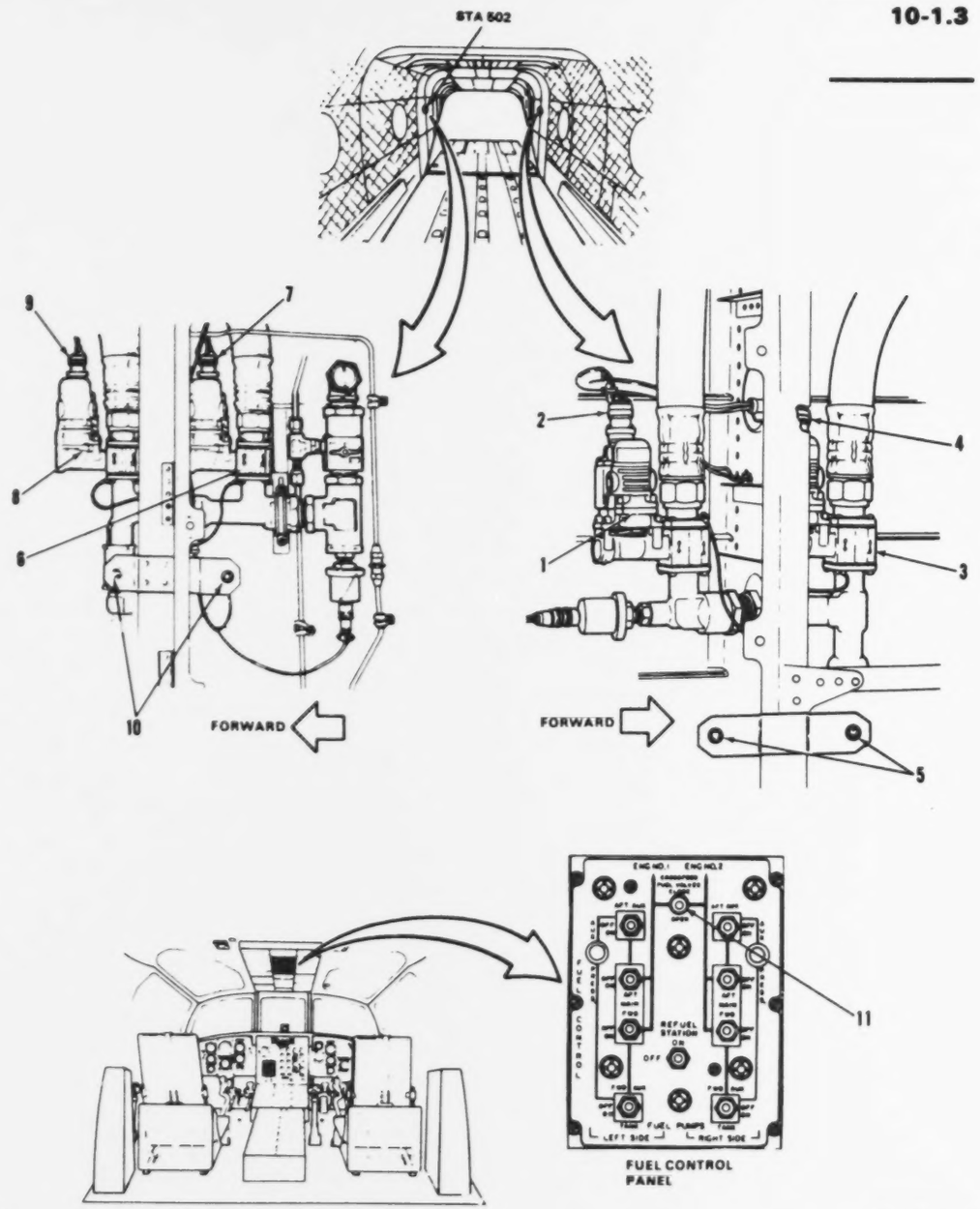
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

TASK	RESULT
1. **Check left crossfeed valve (1).**	If valve (1) is loose or damaged, tighten or replace it as required. If wiring or connector (2) is damaged, repair or replace wiring or connector as required
2. **Check No. 1 engine fuel valve (3).**	If valve (3) is loose or damaged, tighten or replace it as required. If wiring or connector (4) is damaged, repair or replace wiring or connector as required.
3. **Check left crossfeed valve and No. 1 engine fuel valve lights (5).**	If either light (5) is damaged, replace it. If wiring to either light is damaged, repair or replace it as required.
4. **Check right crossfeed valve (6).**	If valve (6) is loose or damaged, tighten or replace it as required. If wiring or connector (7) is damaged, repair or replace wiring or connector as required.
5. **Check No. 2 engine fuel valve (8).**	If valve (8) is loose or damaged, tighten or replace it as required. If wiring or connector (9) is damaged, repair or replace wiring or connector as required.
6. **Check right crossfeed valve and No. 2 engine fuel valve lights (10).**	If either light (10) is damaged, replace it. If wiring to either light is damaged, repair or replace it as required.
7. **Check CROSSFEED FUEL VALVES switch (11).**	If switch (11) is loose or damaged, tighten or replace it as required.



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D145-9064-9PA

FOLLOW-ON MAINTENANCE:
None

END OF TASK

10-1.4 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

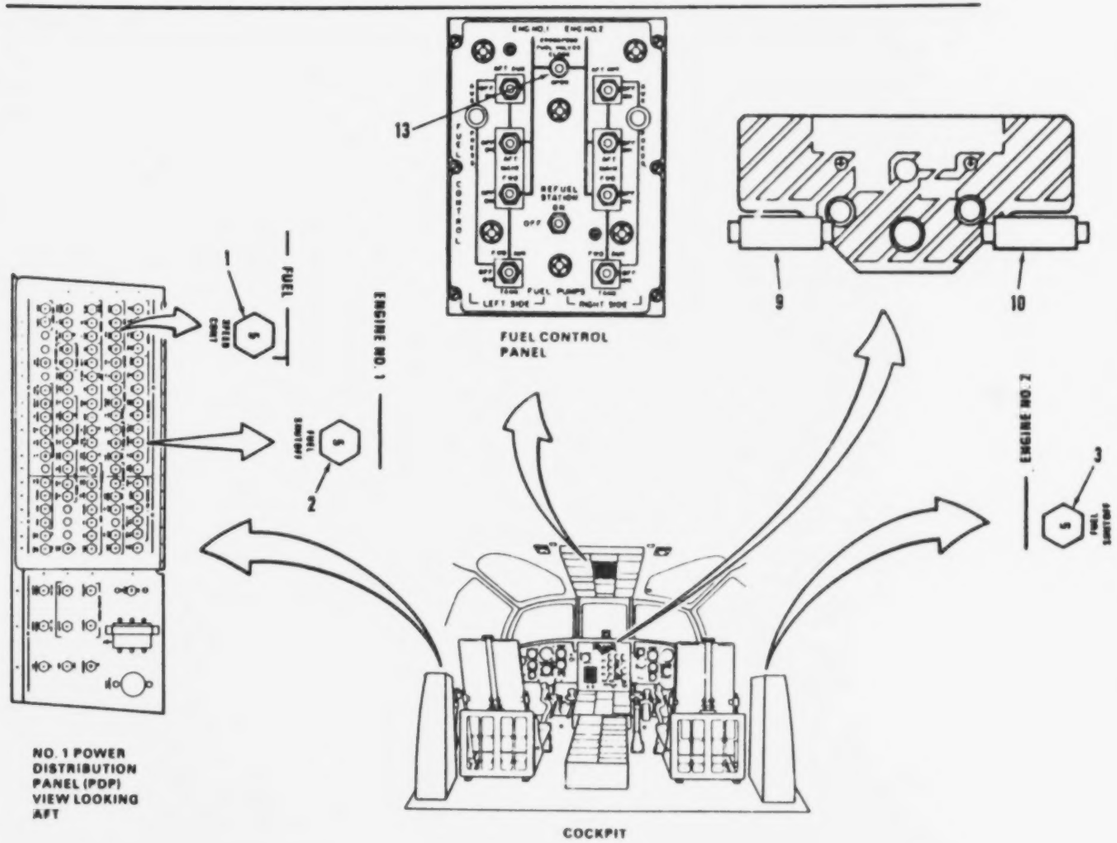
Tools:
None

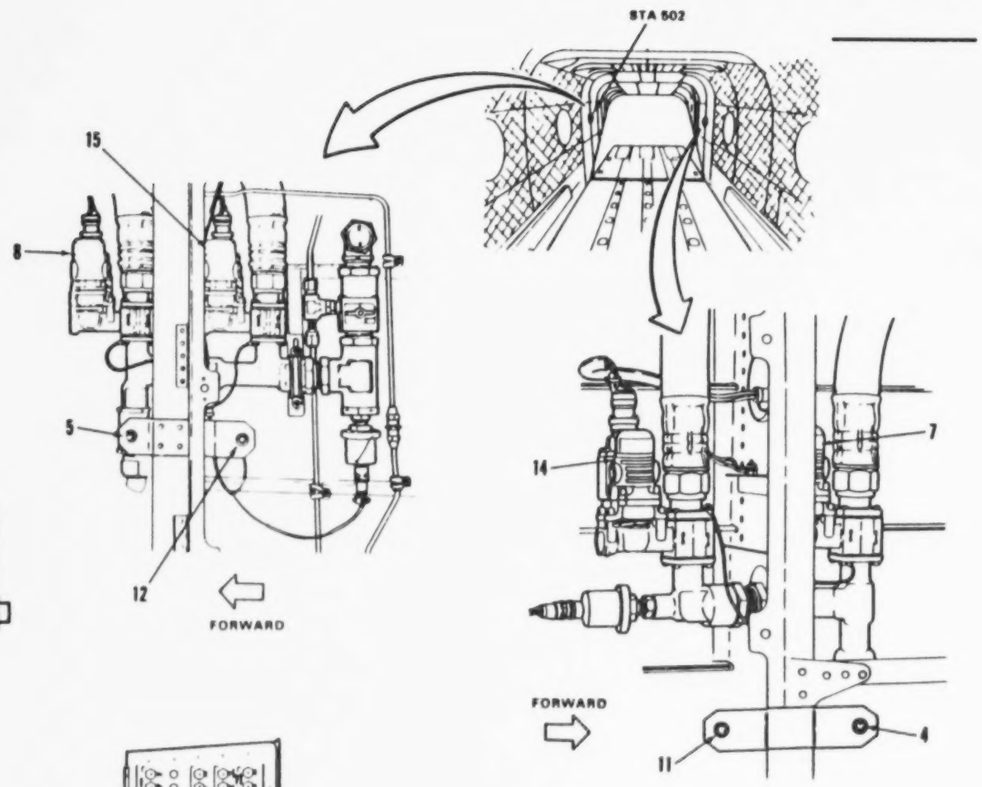
Materials:
None

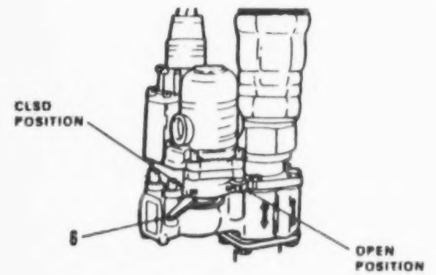
Personnel Required:
68F20 Aircraft Electrician
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Engine Fuel Shutoff And Crossfeed Valves Visual Check Performed (Task 10-1.3)







FUEL VALVE

90X54

D145 5065-SP4

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GO TO NEXT PAGE

10-1.4 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES OPERATIONAL CHECK (Continued)

TASK	RESULT
CHECK CIRCUIT BREAKERS	
1. **Check** that **FUEL XFEED CONT circuit breaker (1)** is closed.	If XFEED CONT circuit breaker (1) is open, close it. If it opens again, go to task 10-1.5.
2. **Check** that **ENGINE NO. 1 FUEL SHUTOFF circuit breaker (2)** is closed.	If FUEL SHUTOFF circuit breaker (2) is open, close it. If it opens again, go to task 10-1.6.
3. **Check** that **ENGINE NO. 2 FUEL SHUTOFF circuit breaker (3)** is closed.	If FUEL SHUTOFF circuit breaker (3) is open, close it. If it opens again, go to task 10-1.6.
CHECK ENGINE FUEL SHUTOFF VALVES	
4. **Press and release No. 1 engine fuel valve light (4).**	Light (4) shall momentarily come on. If it does not, go to task 10-1.7.
5. **Press and release No. 2 engine fuel valve light (5).**	Light (5) shall momentarily come on. If it does not, go to task 10-1.8.
6. **Open ENGINE NO. 1 FUEL SHUTOFF circuit breaker (2) and ENGINE NO. 2 FUEL SHUTOFF circuit breaker (3).**	
7. **Set handles (6)** on No. 1 engine fuel valve (7) and No. 2 engine fuel valve (8) **to CLSD.**	If handle (6) cannot be moved to CLSD, replace No. 1 or No. 2 engine fuel valve as required.
8. **Close ENGINE NO. 1 FUEL SHUTOFF circuit breaker (2).**	Handle (6) on No. 1 engine fuel valve (7) shall move to OPEN. No. 1 engine fuel valve light (4) shall come on and remain on until handle is at OPEN. If handle is not at OPEN or light comes on and stays on, go to task 10-1.9. If light did not come on but handle is at OPEN, go to task 10-1.10. If light is on and handle is at OPEN, replace No. 1 engine fuel valve.
9. **Close ENGINE NO. 2 FUEL SHUTOFF circuit breaker (3).**	Handle (6) on No. 2 engine fuel valve (8) shall move to OPEN. No. 2 engine fuel valve light (5) shall come on and remain on until handle is at OPEN. If handle is not at OPEN or light comes on and stays on, go to task 10-1.9. If light did not come on but handle is at OPEN, go to task 10-1.10. If light is on and handle is at OPEN, replace No. 2 engine fuel valve.

CAUTION

Do not operate FIRE AGENT switch while fire handles are out. Fire bottles will discharge into engines.

TASK	RESULT
10. **Pull out No. 1 ENGINE fire handle (9).**	Handle (6) on No. 1 engine fuel valve (7) shall move to CLSD. No. 1 engine fuel valve light (4) shall come on and remain on until handle is at CLSD. If handle is not at CLSD or light (4) comes on and stays on, go to task 10-1.11. If light did not come on but handle is at CLSD, go to task 10-1.10. If light is on and handle is at CLSD, replace No. 1 engine fuel valve.
11. **Pull out No. 2 ENGINE fire handle (10).**	Handle (6) on No. 2 engine fuel valve (8) shall move to CLSD. No. 2 engine fuel valve light (5) shall come on and remain on until handle is at CLSD. If handle is not at CLSD or light comes on and stays on, go to task 10-1.11. If light (4) did not come on but handle (6) is at CLSD, go to task 10-1.10. If light is on and handle is at CLSD, replace No. 2 engine fuel valve.
12. **Open ENGINE NO. 1 FUEL SHUTOFF circuit breaker (2) and ENGINE NO. 2 FUEL SHUTOFF circuit breaker (3).**	
13. **Set handles (6)** on No. 1 engine fuel valve (7) and No. 2 engine fuel valve (8) **to OPEN.**	
14. **Close ENGINE NO. 1 FUEL SHUTOFF circuit breaker (2).**	Handle (6) on No. 1 engine fuel valve (7) shall move to CLSD. No. 1 engine fuel valve light (4) shall come on and remain on until handle is at CLSD. If not, replace No. 1 engine fuel valve.
15. **Close ENGINE NO. 2 FUEL SHUTOFF circuit breaker (3).**	Handle (6) on No. 2 engine fuel valve (8) shall move to CLSD. No. 2 engine fuel valve light (5) shall come on and remain on until handle is at CLSD. If not, replace No. 2 engine fuel valve.
16. **Push in No. 1 ENGINE fire handle (9).**	Handle (6) on No. 1 engine fuel valve (7) shall move to OPEN. If not, replace No. 1 ENGINE fire pull control.
17. **Push in No. 2 ENGINE fire handle (10).**	Handle (6) on No. 2 engine fuel valve (8) shall move to OPEN. If not, replace No. 2 ENGINE fire pull control.
CHECK CROSSFEED VALVES	
18. **Press and release left crossfeed fuel valve light (11).**	Light (11) shall momentarily come on. If it does not, go to task 10-1.12.

GO TO NEXT PAGE

10-1.4 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES OPERATIONAL CHECK (Continued)

TASK	RESULT
19. **Press and release right crossfeed fuel valve light (12).**	Light (12) shall momentarily come on. If it does not, go to task 10-1.13.
20. **Set CROSSFEED FUEL VALVES switch (13) to OPEN.**	Handles (6) on left crossfeed fuel valve (14) and right crossfeed fuel valve (15) shall move to OPEN. Left and right crossfeed fuel valve lights (11 and 12) shall come on and remain on until handles are at OPEN. If either crossfeed fuel valve handle is not at OPEN or light comes on and stays on, go to task 10-1.14. If either light did not come on but handle is at OPEN, go to task 10-1.15. If either light is on and handle is at OPEN, replace faulty crossfeed fuel valve.
21. **Open FUEL XFEED CONT circuit breaker (1).**	
22. **Set handle (6) on left and right crossfeed fuel valves (14 and 15) to CLSD.**	If handle (6) cannot be moved to CLSD, replace left or right crossfeed fuel valve, as required.
23. **Close FUEL XFEED CONT circuit breaker (1).**	Handles (6) on left and right crossfeed fuel valves (14 and 15) shall move to OPEN. Left and right crossfeed fuel valve lights (11 and 12) shall come on and remain on until handles are at OPEN. If not, replace faulty crossfeed fuel valve.
24. **Set CROSSFEED FUEL VALVES switch (13) to CLOSE.**	Handles (6) on left and right crossfeed fuel valves (14 and 15) shall move to CLSD. Left and right crossfeed fuel valve lights (11 and 12) shall come on and remain on until handles are at CLSD. If either crossfeed fuel valve handle is not at CLSD or light comes on and stays on, go to task 10-1.16. If either light did not come on but handles are at CLSD, go to task 10-1.15. If light is on and handle is at OPEN, replace faulty crossfeed fuel valve.
25. **Open FUEL XFEED CONT circuit breaker (1).**	
26. **Set handle (6) on left and right crossfeed fuel valves (14 and 15) to OPEN.**	
27. **Close FUEL XFEED CONT circuit breaker (1).**	Handles (6) on left and right crossfeed fuel valves (14 and 15) shall move to CLSD. Left and right crossfeed fuel valve lights (11 and 12) shall come on and remain on until handles are at CLSD. If either handle is not at CLSD or light comes on and stays on, replace faulty crossfeed fuel valve.

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Electrical Power Off
Disconnect Battery

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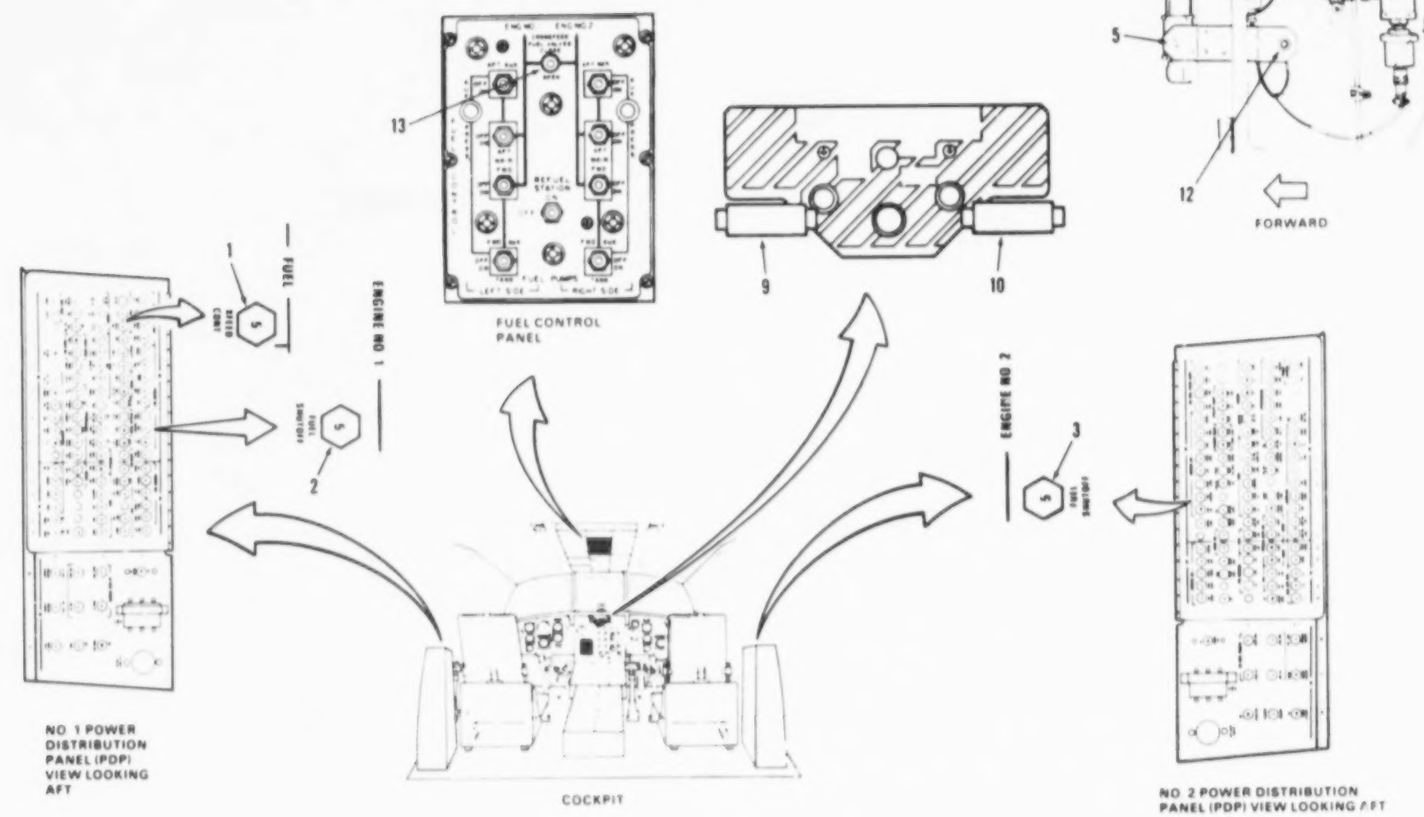
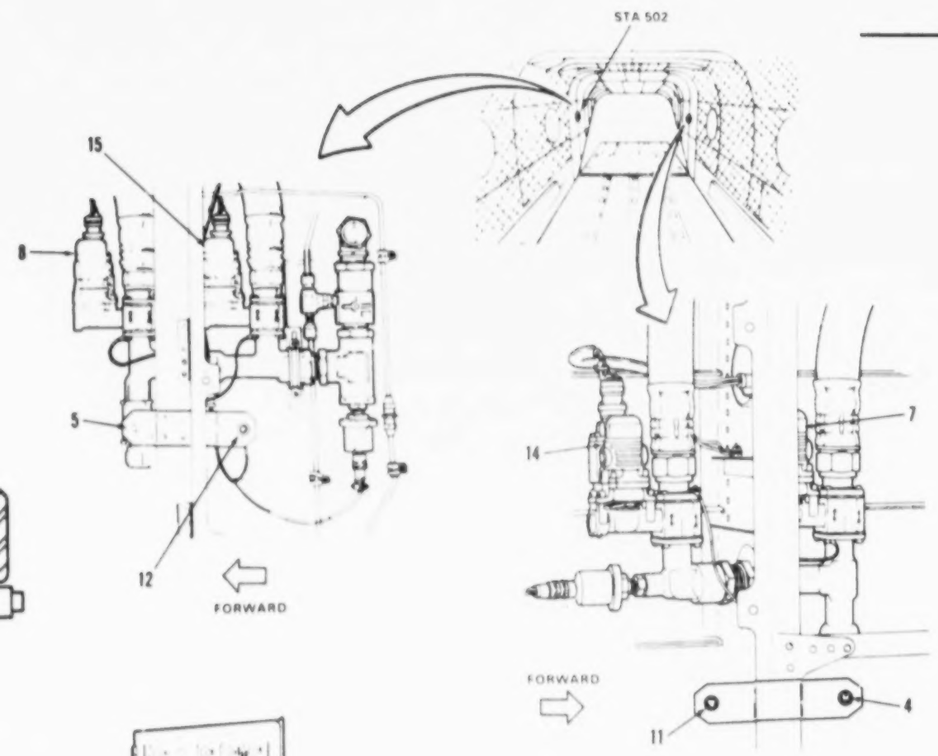
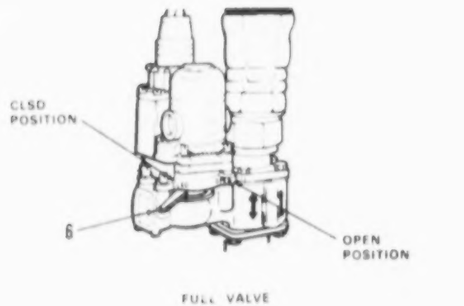
10-1.4 ENGINE FUEL SHUTOFF AND CROSSFEED VALVES OPERATIONAL CHECK (Continued)







FULL VALVE

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END OF TASK

10-1.5 FUEL XFEED CONT CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

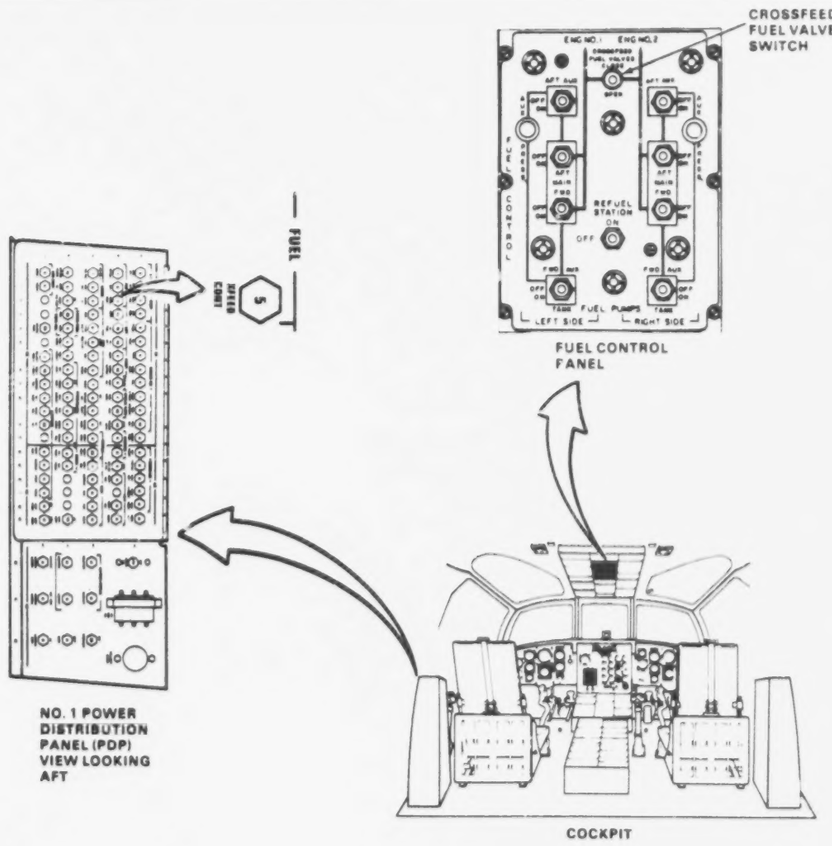
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

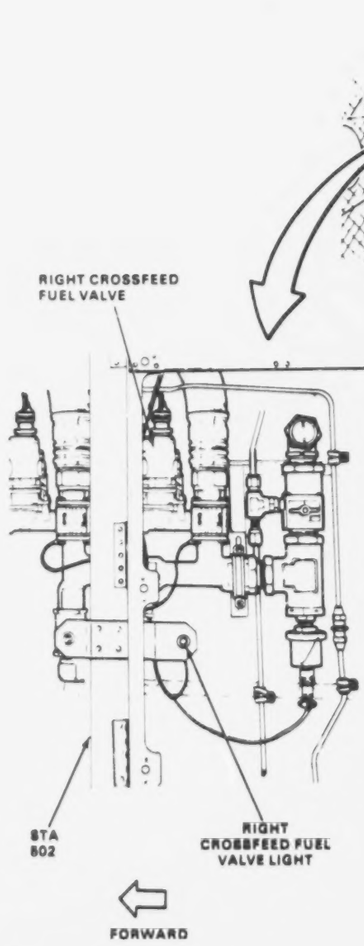
Materials:
None

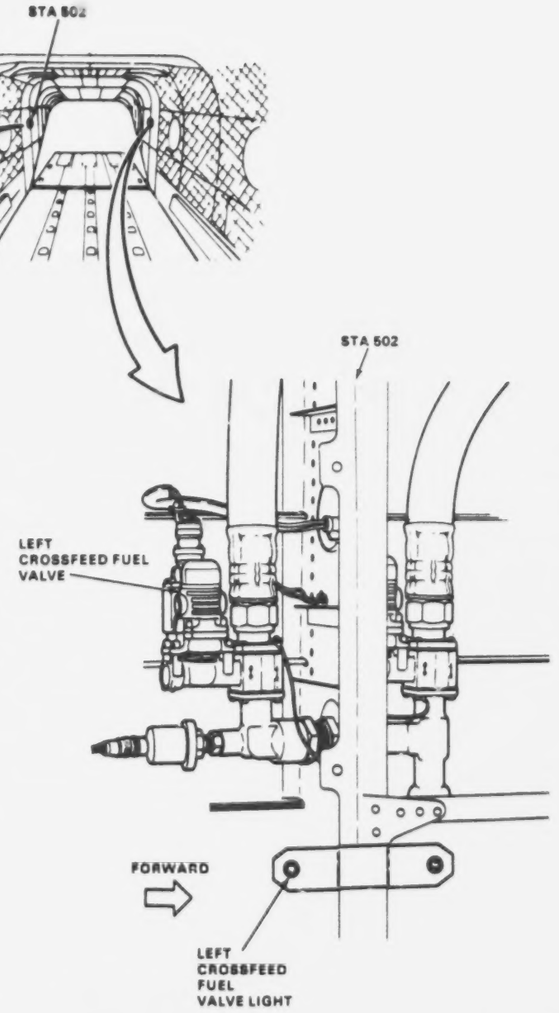
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off







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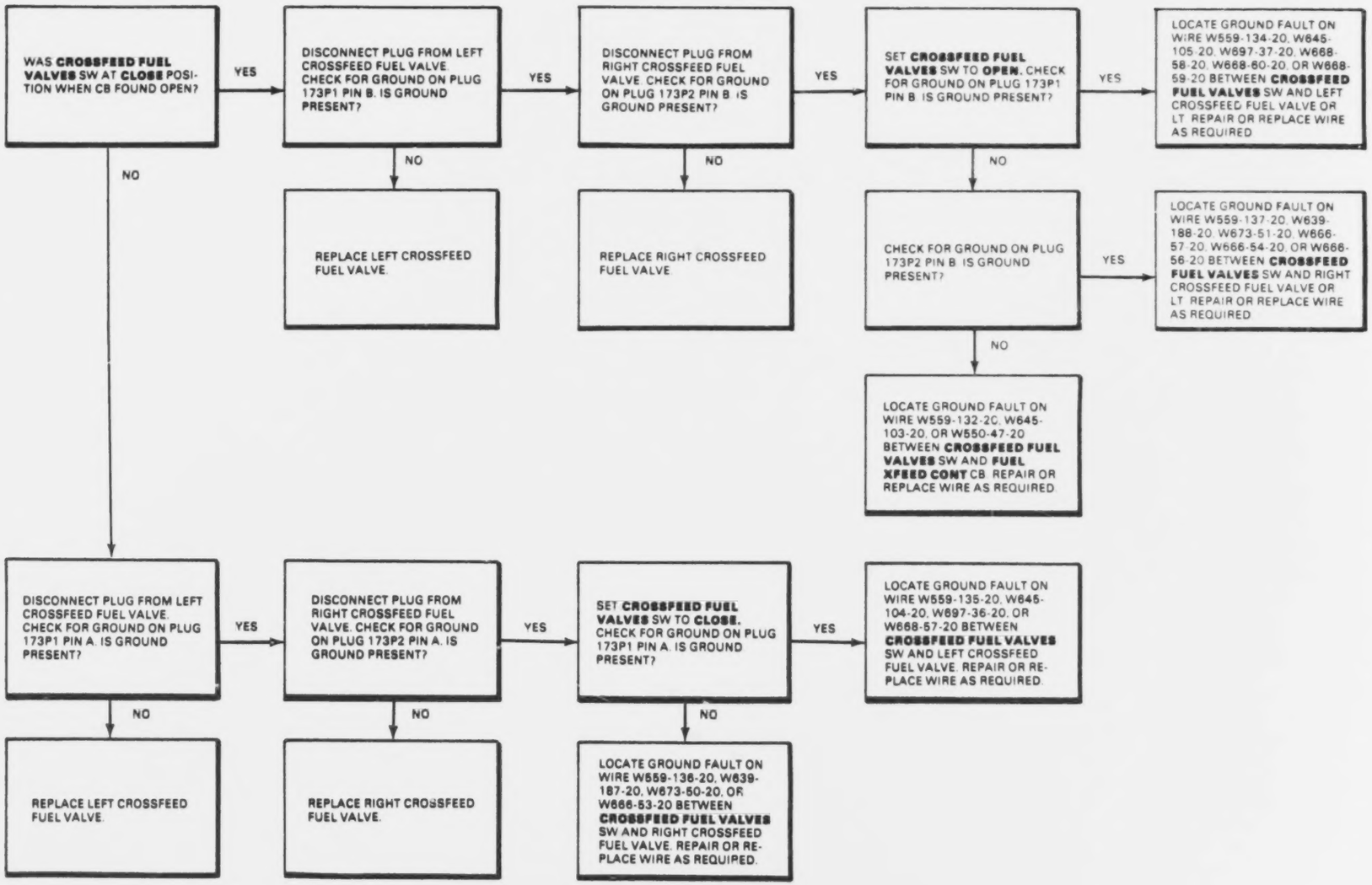
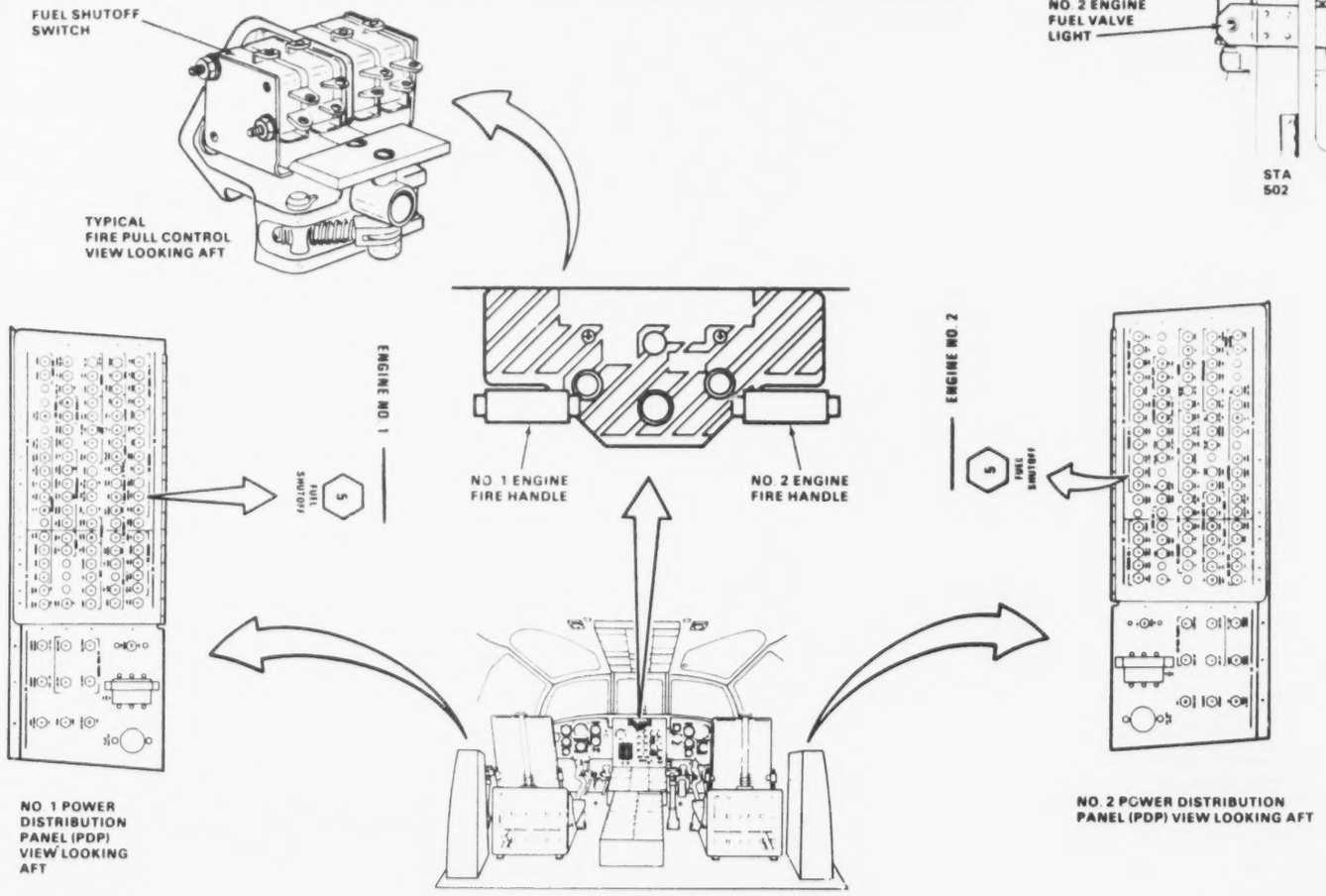
10-1.5 FUEL XFEED CONT CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CROSSFEED FUEL VALVES SW AT CLOSE POSITION WHEN CB FOUND OPEN?
YES
DISCONNECT PLUG FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P1 PIN B. IS GROUND PRESENT?
YES
DISCONNECT PLUG FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P2 PIN B. IS GROUND PRESENT?
YES
SET CROSSFEED FUEL VALVES SW TO OPEN. CHECK FOR GROUND ON PLUG 173P1 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-134-20, W645-105-20, W697-37-20, W668-58-20, W668-60-20, OR W668-59-20 BETWEEN CROSSFEED FUEL VALVES SW AND LEFT CROSSFEED FUEL VALVE OR LT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE LEFT CROSSFEED FUEL VALVE.
NO
REPLACE RIGHT CROSSFEED FUEL VALVE.
NO
CHECK FOR GROUND ON PLUG 173P2 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-137-20, W639-188-20, W673-51-20, W666-57-20, W666-54-20, OR W666-56-20 BETWEEN CROSSFEED FUEL VALVES SW AND RIGHT CROSSFEED FUEL VALVE OR LT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W559-132-20, W645-103-20, OR W550-47-20 BETWEEN CROSSFEED FUEL VALVES SW AND FUEL XFEED CONT CB. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P1 PIN A. IS GROUND PRESENT?
YES
DISCONNECT PLUG FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P2 PIN A. IS GROUND PRESENT?
YES
SET CROSSFEED FUEL VALVES SW TO CLOSE. CHECK FOR GROUND ON PLUG 173P1 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-135-20, W645-104-20, W697-36-20, OR W668-57-20 BETWEEN CROSSFEED FUEL VALVES SW AND LEFT CROSSFEED FUEL VALVE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE LEFT CROSSFEED FUEL VALVE.
NO
REPLACE RIGHT CROSSFEED FUEL VALVE.
NO
LOCATE GROUND FAULT ON WIRE W559-136-20, W639-187-20, W673-50-20, OR W666-53-20 BETWEEN CROSSFEED FUEL VALVES SW AND RIGHT CROSSFEED FUEL VALVE. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.6 ENGINE FUEL SHUTOFF CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE
INITIAL SETUP
Applicable Configurations:
All
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter
Materials:
None
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
References:
TM 55-1520-240-23
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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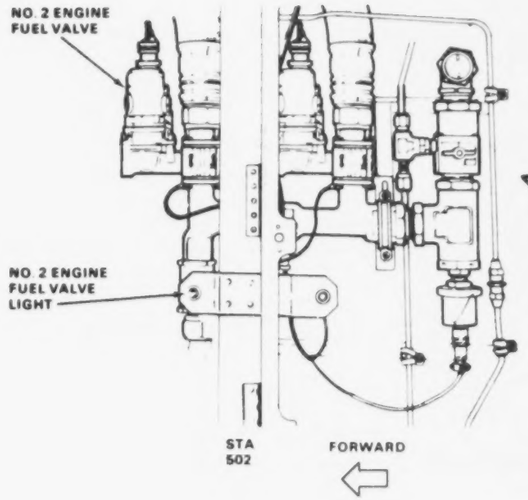

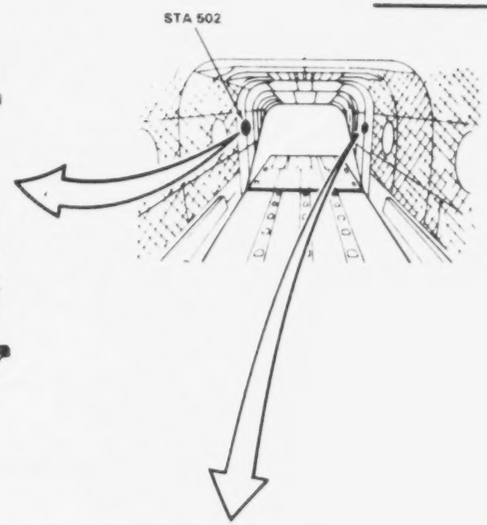

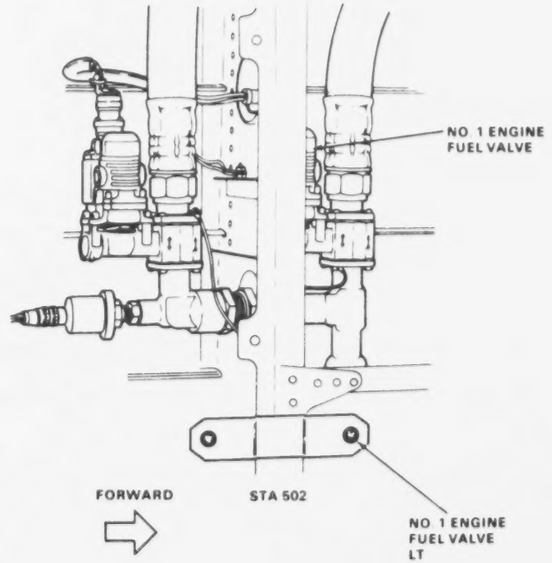

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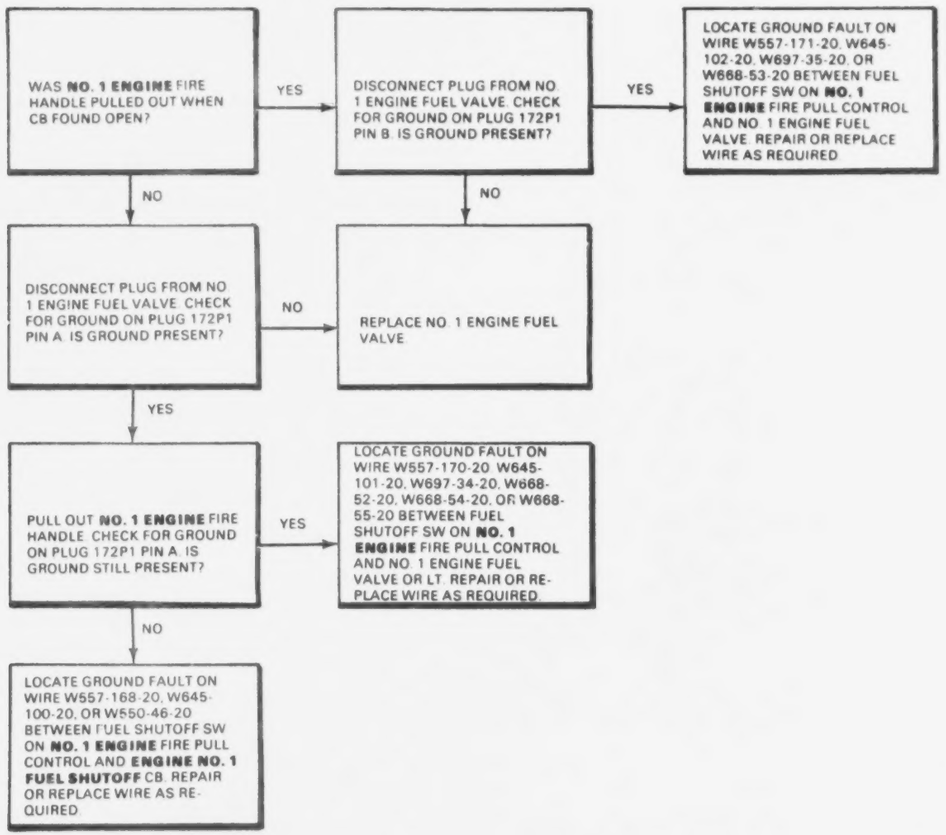
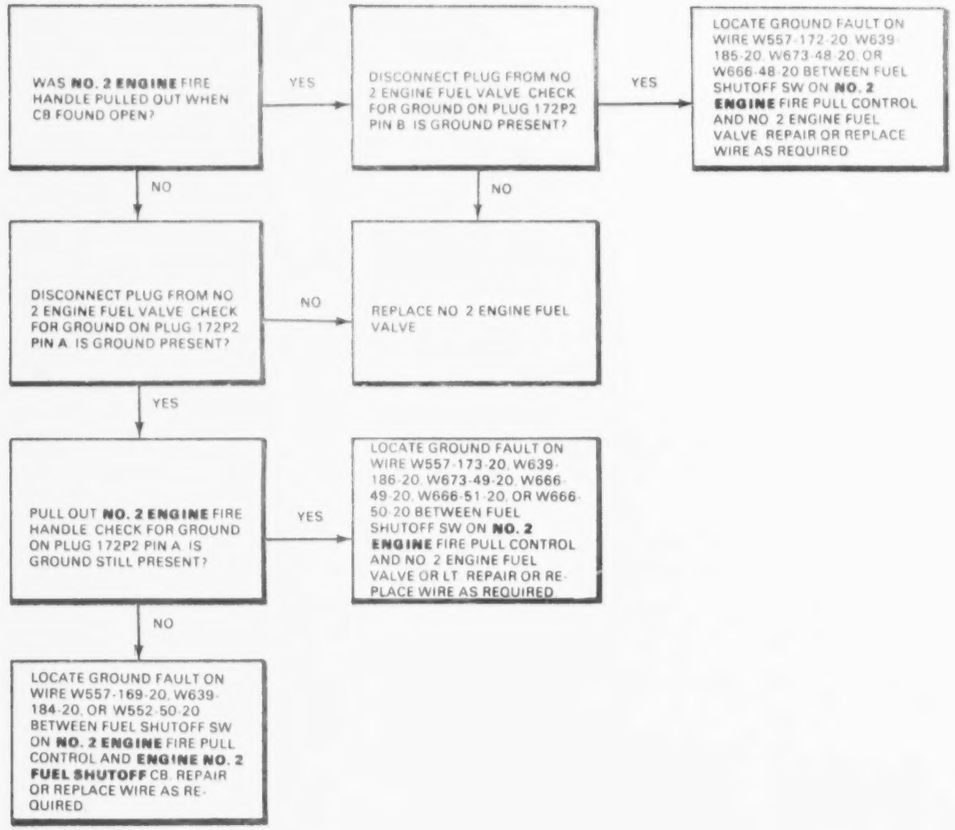
10-1.6 ENGINE FUEL SHUTOFF CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)

ENGINE NO. 1 FUEL SHUTOFF CIRCUIT BREAKER DOES NOT STAY CLOSED


WAS NO. 1 ENGINE FIRE HANDLE PULLED OUT WHEN CB FOUND OPEN?
YES
DISCONNECT PLUG FROM NO. 1 ENGINE FUEL VALVE. CHECK FOR GROUND ON PLUG 172P1 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W557-171-20, W645-102-20, W697-35-20, OR W668-53-20 BETWEEN FUEL SHUTOFF SW ON NO. 1 ENGINE FIRE PULL CONTROL AND NO. 1 ENGINE FUEL VALVE. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
DISCONNECT PLUG FROM NO 1 ENGINE FUEL VALVE. CHECK FOR GROUND ON PLUG 172P1 PIN A. IS GROUND PRESENT?
NO
REPLACE NO. 1 ENGINE FUEL VALVE.
YES
PULL OUT NO. 1 ENGINE FIRE HANDLE. CHECK FOR GROUND ON PLUG 172P1 PIN A. IS GROUND STILL PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W557-170-20, W645-101-20, W697-34-20, W668-52-20, W668-54-20, OR W668-55-20 BETWEEN FUEL SHUTOFF SW ON NO. 1 ENGINE FIRE PULL CONTROL AND NO. 1 ENGINE FUEL VALVE OR LT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W557-168-20, W645-100-20, OR W550-46-20 BETWEEN FUEL SHUTOFF SW ON NO. 1 ENGINE FIRE PULL CONTROL AND ENGINE NO. 1 FUEL SHUTOFF CB. REPAIR OR REPLACE WIRE AS REQUIRED.

ENGINE NO. 2 FUEL SHUTOFF CIRCUIT BREAKER DOES NOT STAY CLOSED


WAS NO. 2 ENGINE FIRE HANDLE PULLED OUT WHEN CB FOUND OPEN?
YES
DISCONNECT PLUG FROM NO. 2 ENGINE FUEL VALVE. CHECK FOR GROUND ON PLUG 172P2 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W557-172-20, W639-185-20, W673-48-20, OR W666-48-20 BETWEEN FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND NO. 2 ENGINE FUEL VALVE. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
DISCONNECT PLUG FROM NO 2 ENGINE FUEL VALVE. CHECK FOR GROUND ON PLUG 172P2 PIN A. IS GROUND PRESENT?
NO
REPLACE NO. 2 ENGINE FUEL VALVE
YES
PULL OUT NO. 2 ENGINE FIRE HANDLE. CHECK FOR GROUND ON PLUG 172P2 PIN A. IS GROUND STILL PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W557-173-20, W639-186-20, W673-49-20, W666-49-20, W666-51-20, OR W666-50-20 BETWEEN FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND NO. 2 ENGINE FUEL VALVE OR LT. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE GROUND FAULT ON WIRE W557-169-20, W639-184-20, OR W552-50-20 BETWEEN FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND ENGINE NO. 2 FUEL SHUTOFF CB. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.7 NO. 1 ENGINE FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

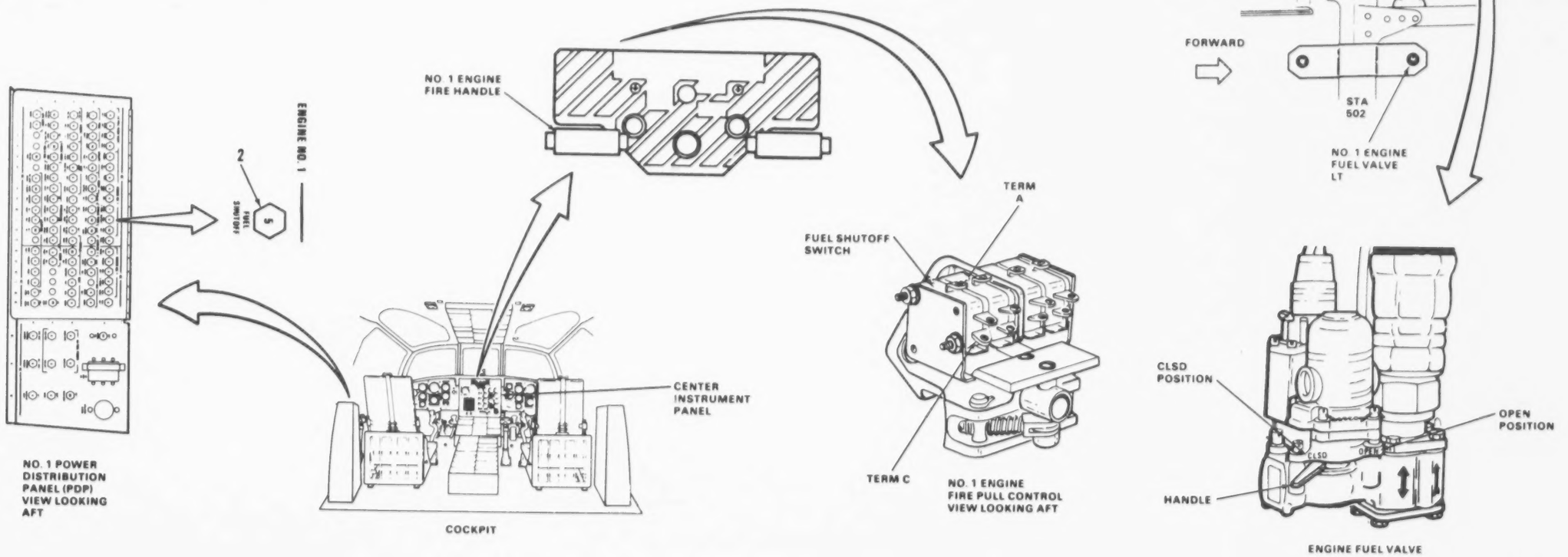
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off



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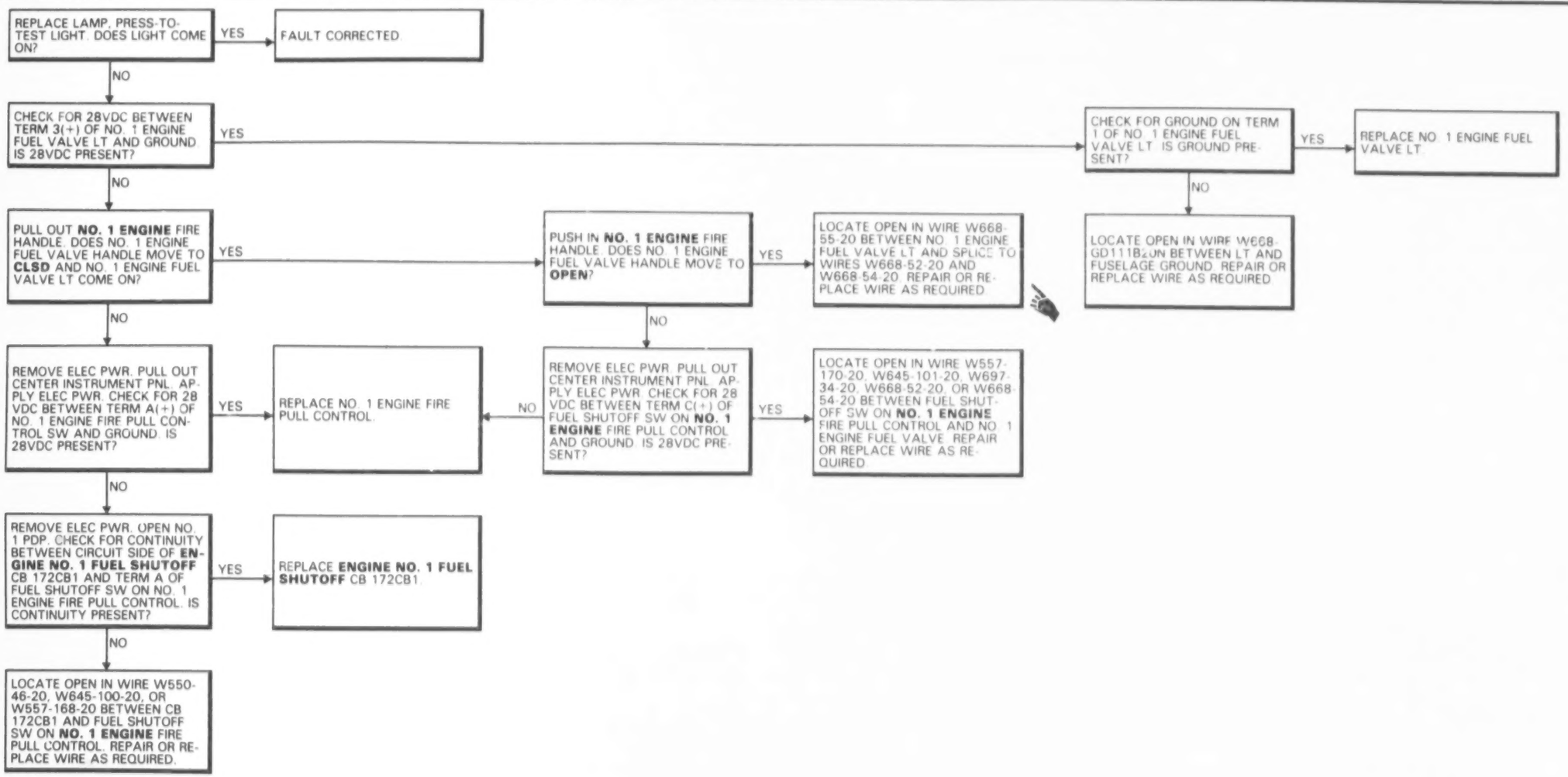
10-1.7 NO. 1 ENGINE FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST (Continued)


REPLACE LAMP, PRESS-TO-TEST LIGHT. DOES LIGHT COME ON?
YES
FAULT CORRECTED.
NO
CHECK FOR 28VDC BETWEEN TERM 3(+) OF NO. 1 ENGINE FUEL VALVE LT AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR GROUND ON TERM 1 OF NO. 1 ENGINE FUEL VALVE LT. IS GROUND PRESENT?
YES
REPLACE NO. 1 ENGINE FUEL VALVE LT.
NO
LOCATE OPEN IN WIRE W668-GD111B20N BETWEEN LT AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
PULL OUT **NO. 1 ENGINE** FIRE HANDLE. DOES NO. 1 ENGINE FUEL VALVE HANDLE MOVE TO **CLSD** AND NO. 1 ENGINE FUEL VALVE LT COME ON?
YES
PUSH IN **NO. 1 ENGINE** FIRE HANDLE. DOES NO. 1 ENGINE FUEL VALVE HANDLE MOVE TO **OPEN**?
YES
LOCATE OPEN IN WIRE W668-55-20 BETWEEN NO. 1 ENGINE FUEL VALVE LT AND SPLICE TO WIRES W668-52-20 AND W668-54-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. PULL OUT CENTER INSTRUMENT PNL. APPLY ELEC PWR. CHECK FOR 28 VDC BETWEEN TERM A(+) OF NO. 1 ENGINE FIRE PULL CONTROL SW AND GROUND. IS 28VDC PRESENT?
YES
REPLACE NO. 1 ENGINE FIRE PULL CONTROL.
NO
REMOVE ELEC PWR. PULL OUT CENTER INSTRUMENT PNL. APPLY ELEC PWR. CHECK FOR 28 VDC BETWEEN TERM C(+) OF FUEL SHUTOFF SW ON **NO. 1 ENGINE** FIRE PULL CONTROL AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W557-170-20, W645-101-20, W697-34-20, W668-52-20, OR W668-54-20 BETWEEN FUEL SHUTOFF SW ON **NO. 1 ENGINE** FIRE PULL CONTROL AND NO. 1 ENGINE FUEL VALVE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF **ENGINE NO. 1 FUEL SHUTOFF** CB 172CB1 AND TERM A OF FUEL SHUTOFF SW ON NO. 1 ENGINE FIRE PULL CONTROL. IS CONTINUITY PRESENT?
YES
REPLACE **ENGINE NO. 1 FUEL SHUTOFF** CB 172CB1.
NO
LOCATE OPEN IN WIRE W550-46-20, W645-100-20, OR W557-168-20 BETWEEN CB 172CB1 AND FUEL SHUTOFF SW ON **NO. 1 ENGINE** FIRE PULL CONTROL. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.8 NO. 2 ENGINE FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

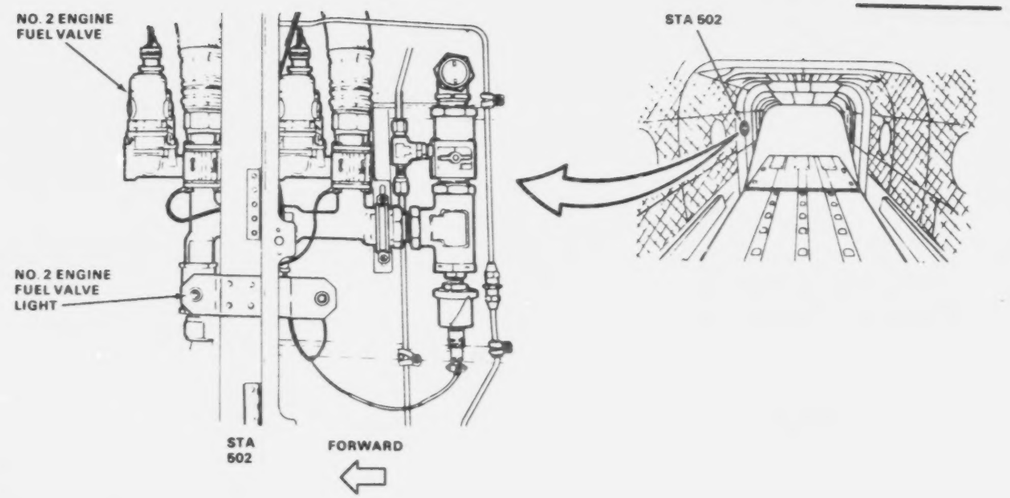
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

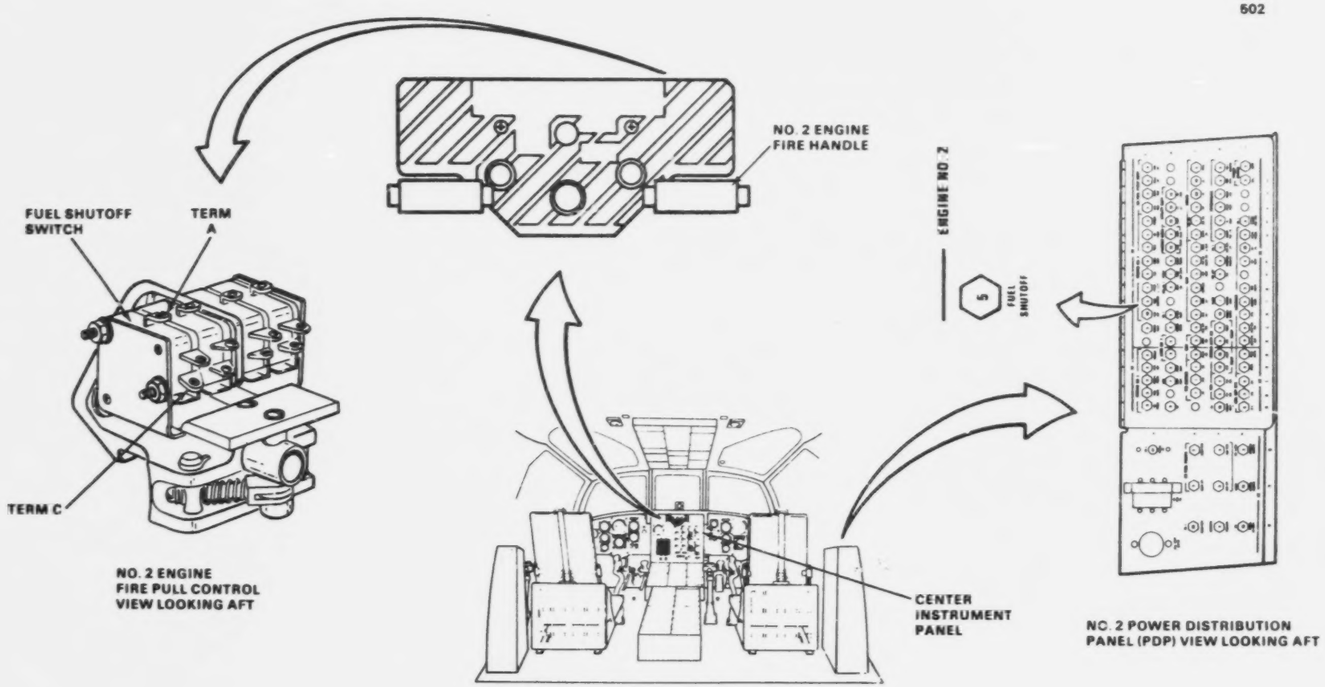
Materials:
None

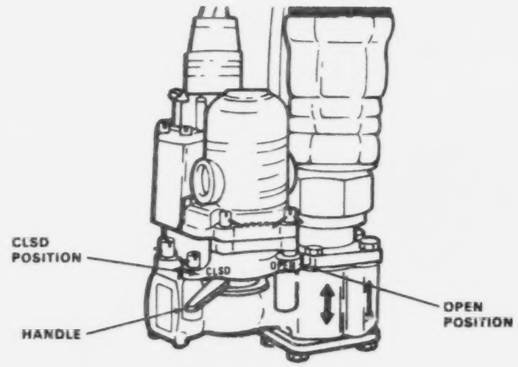
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off







ENGINE FUEL VALVE

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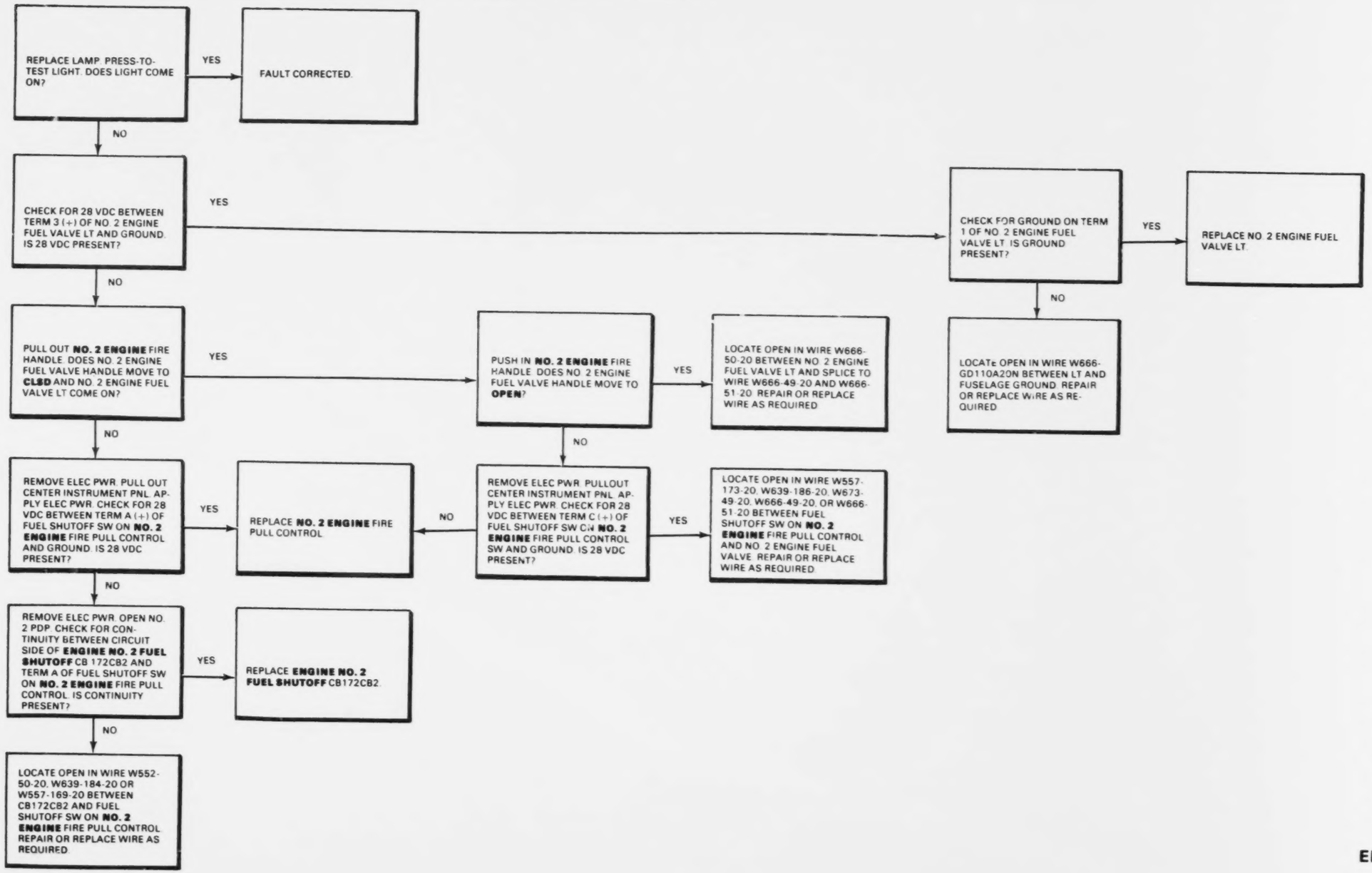
10-1.8 NO. 2 ENGINE FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST (Continued)


REPLACE LAMP. PRESS-TO-TEST LIGHT. DOES LIGHT COME ON?
YES
FAULT CORRECTED.
NO
CHECK FOR 28 VDC BETWEEN TERM 3 (+) OF NO. 2 ENGINE FUEL VALVE LT AND GROUND. IS 28 VDC PRESENT?
YES
CHECK FOR GROUND ON TERM 1 OF NO. 2 ENGINE FUEL VALVE LT. IS GROUND PRESENT?
YES
REPLACE NO. 2 ENGINE FUEL VALVE LT.
NO
LOCATE OPEN IN WIRE W666-GD110A20N BETWEEN LT AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
NO
PULL OUT NO. 2 ENGINE FIRE HANDLE. DOES NO. 2 ENGINE FUEL VALVE HANDLE MOVE TO CLSD AND NO. 2 ENGINE FUEL VALVE LT COME ON?
YES
PUSH IN NO. 2 ENGINE FIRE HANDLE. DOES NO. 2 ENGINE FUEL VALVE HANDLE MOVE TO OPEN?
YES
LOCATE OPEN IN WIRE W666-50-20 BETWEEN NO. 2 ENGINE FUEL VALVE LT AND SPLICE TO WIRE W666-49-20 AND W666-51-20. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REMOVE ELEC PWR. PULL OUT CENTER INSTRUMENT PNL. APPLY ELEC PWR. CHECK FOR 28 VDC BETWEEN TERM A (+) OF FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE NO. 2 ENGINE FIRE PULL CONTROL.
NO
REMOVE ELEC PWR. PULLOUT CENTER INSTRUMENT PNL. APPLY ELEC PWR. CHECK FOR 28 VDC BETWEEN TERM C (+) OF FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W557-173-20, W639-186-20, W673-49-20, W666-49-20, OR W666-51-20 BETWEEN FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND NO. 2 ENGINE FUEL VALVE. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF ENGINE NO. 2 FUEL SHUTOFF CB 172CB2 AND TERM A OF FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL. IS CONTINUITY PRESENT?
YES
REPLACE ENGINE NO. 2 FUEL SHUTOFF CB172CB2.
NO
LOCATE OPEN IN WIRE W552-50-20, W639-184-20 OR W557-169-20 BETWEEN CB172CB2 AND FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.9 ENGINE FUEL VALVE HANDLE IS NOT AT OPEN WITH FIRE HANDLE IN

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

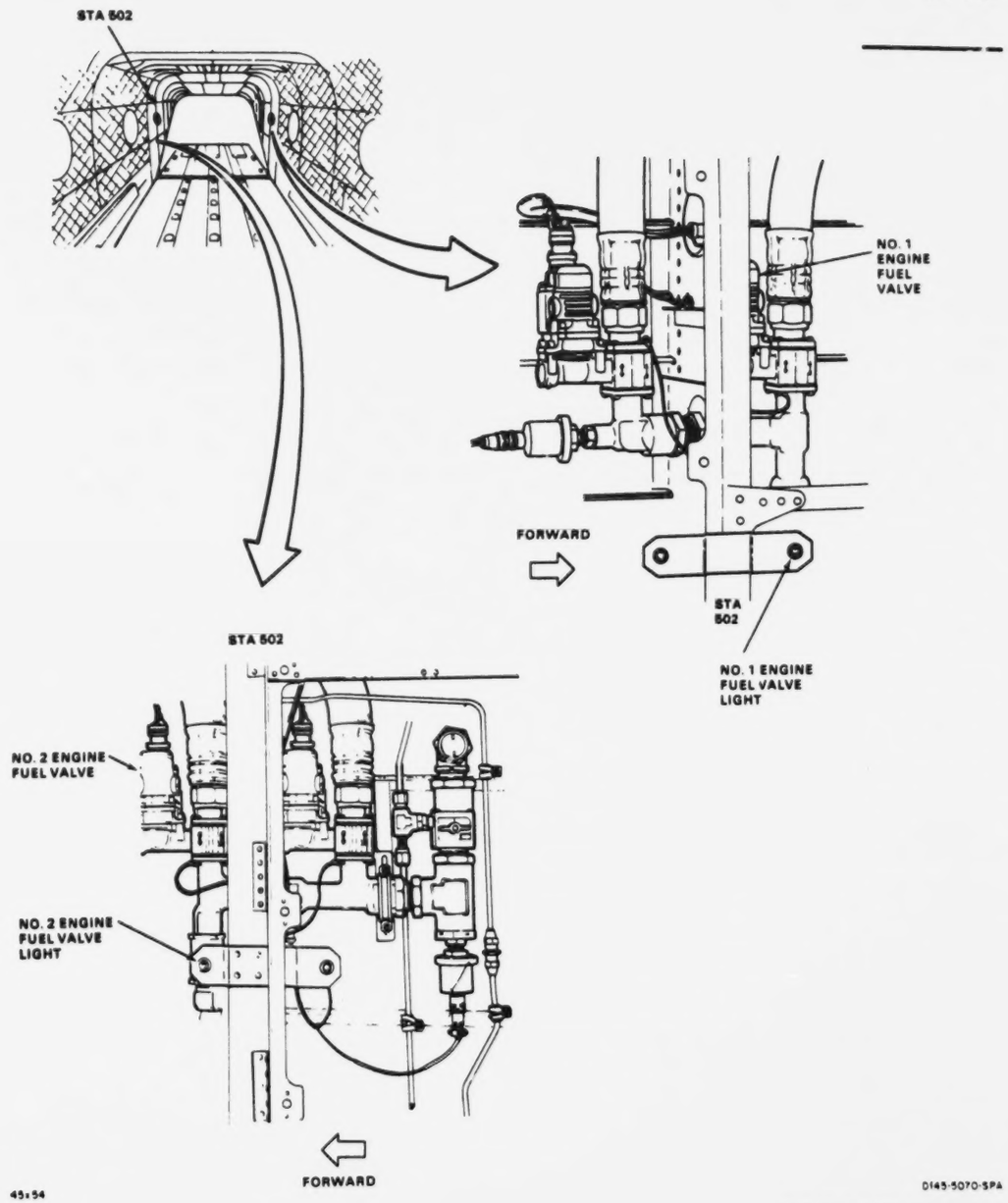
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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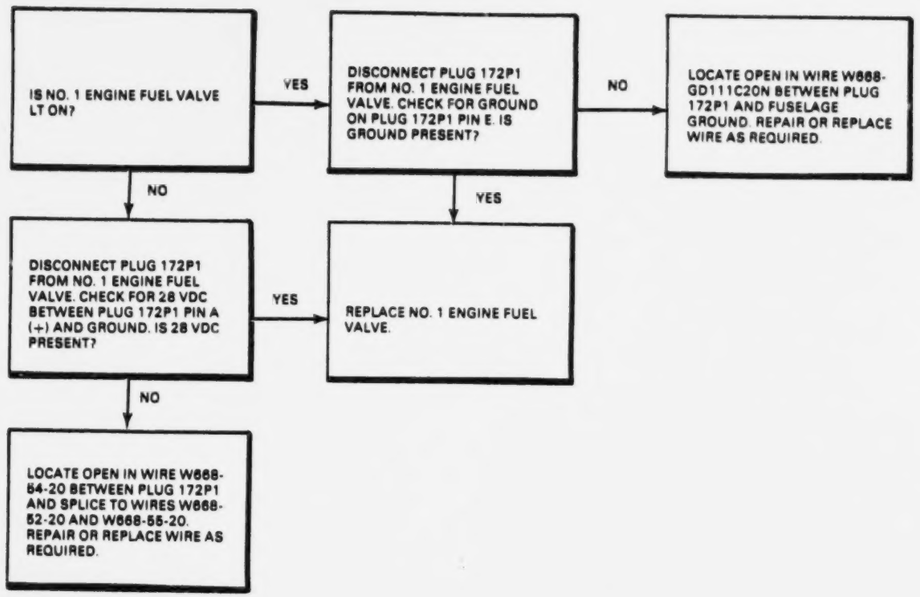
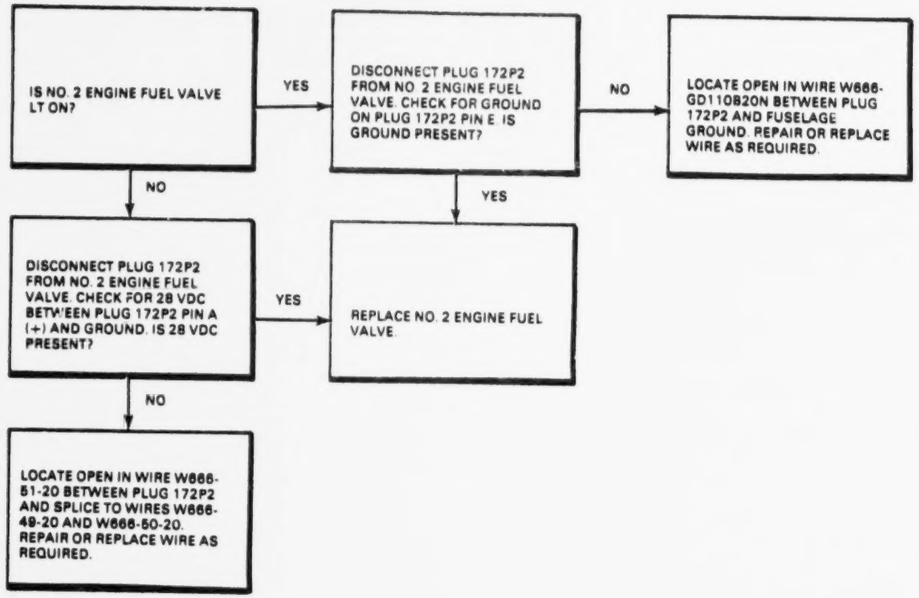
10-1.9 ENGINE FUEL VALVE HANDLE IS NOT AT OPEN WITH FIRE HANDLE IN (Continued)

NO. 1 ENGINE FUEL VALVE HANDLE IS NOT AT OPEN WITH NO. 1 ENGINE FIRE HANDLE IN


IS NO. 1 ENGINE FUEL VALVE LT ON?
YES
DISCONNECT PLUG 172P1 FROM NO. 1 ENGINE FUEL VALVE. CHECK FOR GROUND ON PLUG 172P1 PIN E. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W668-GD111C20N BETWEEN PLUG 172P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
YES
DISCONNECT PLUG 172P1 FROM NO. 1 ENGINE FUEL VALVE. CHECK FOR 28 VDC BETWEEN PLUG 172P1 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE NO. 1 ENGINE FUEL VALVE.
NO
LOCATE OPEN IN WIRE W668-54-20 BETWEEN PLUG 172P1 AND SPLICE TO WIRES W668-52-20 AND W668-55-20. REPAIR OR REPLACE WIRE AS REQUIRED.

NO. 2 ENGINE FUEL VALVE HANDLE IS NOT AT OPEN WITH NO. 2 ENGINE FIRE HANDLE IN


IS NO. 2 ENGINE FUEL VALVE LT ON?
YES
DISCONNECT PLUG 172P2 FROM NO. 2 ENGINE FUEL VALVE. CHECK FOR GROUND ON PLUG 172P2 PIN E. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W666-GD110820N BETWEEN PLUG 172P2 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
YES
DISCONNECT PLUG 172P2 FROM NO. 2 ENGINE FUEL VALVE. CHECK FOR 28 VDC BETWEEN PLUG 172P2 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE NO. 2 ENGINE FUEL VALVE.
NO
LOCATE OPEN IN WIRE W666-51-20 BETWEEN PLUG 172P2 AND SPLICE TO WIRES W666-49-20 AND W666-50-20. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.10 ENGINE FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

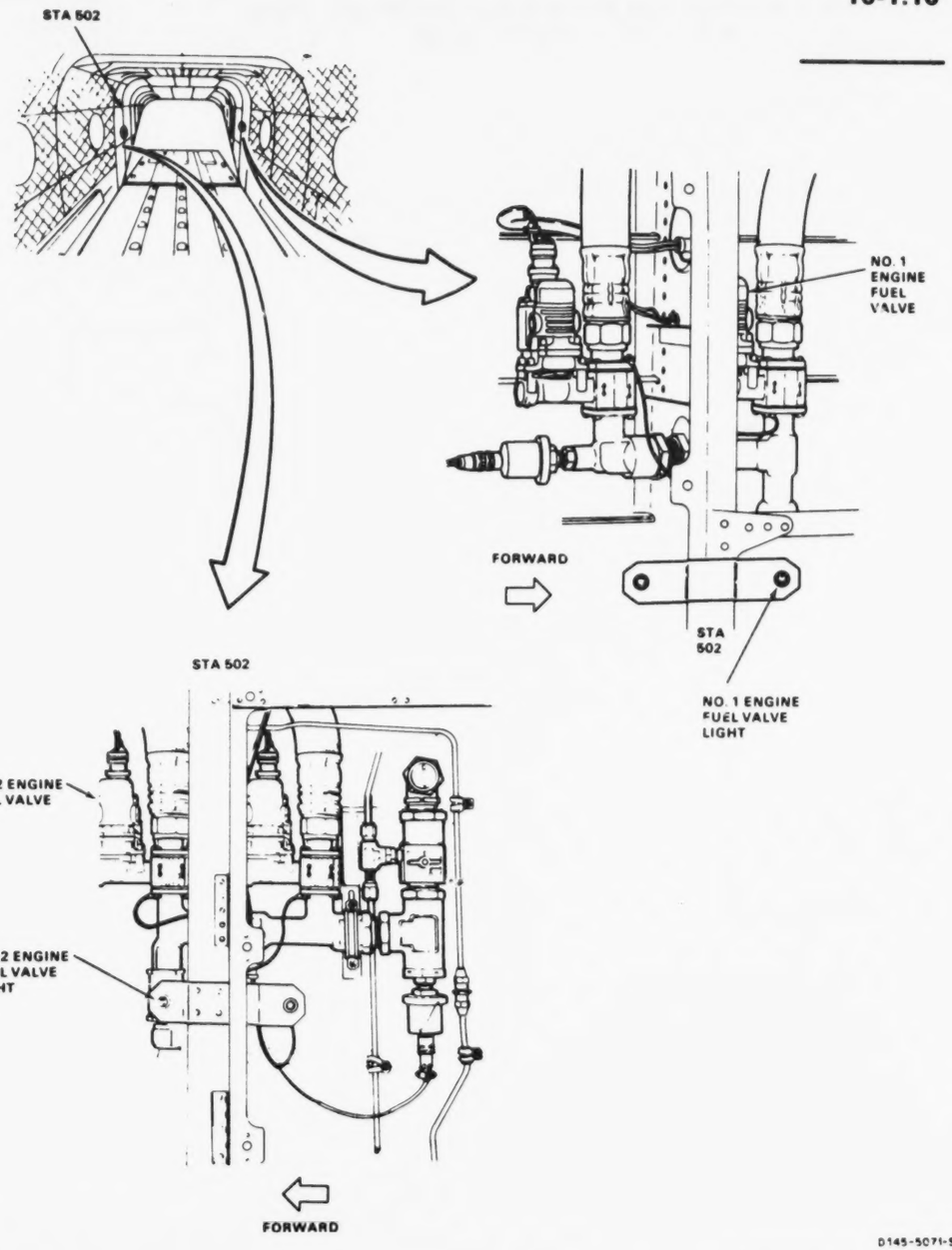
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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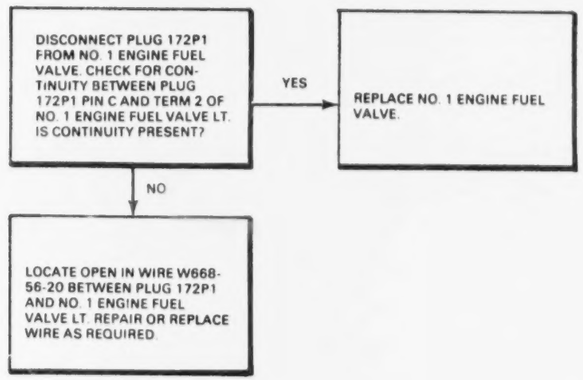
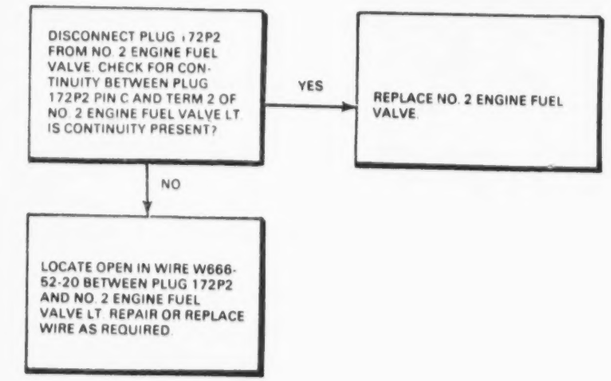
10-1.10 ENGINE FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL (Continued)

NO. 1 ENGINE FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL


DISCONNECT PLUG 172P1 FROM NO. 1 ENGINE FUEL VALVE. CHECK FOR CONTINUITY BETWEEN PLUG 172P1 PIN C AND TERM 2 OF NO. 1 ENGINE FUEL VALVE LT. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 ENGINE FUEL VALVE.
NO
LOCATE OPEN IN WIRE W668-56-20 BETWEEN PLUG 172P1 AND NO. 1 ENGINE FUEL VALVE LT. REPAIR OR REPLACE WIRE AS REQUIRED.

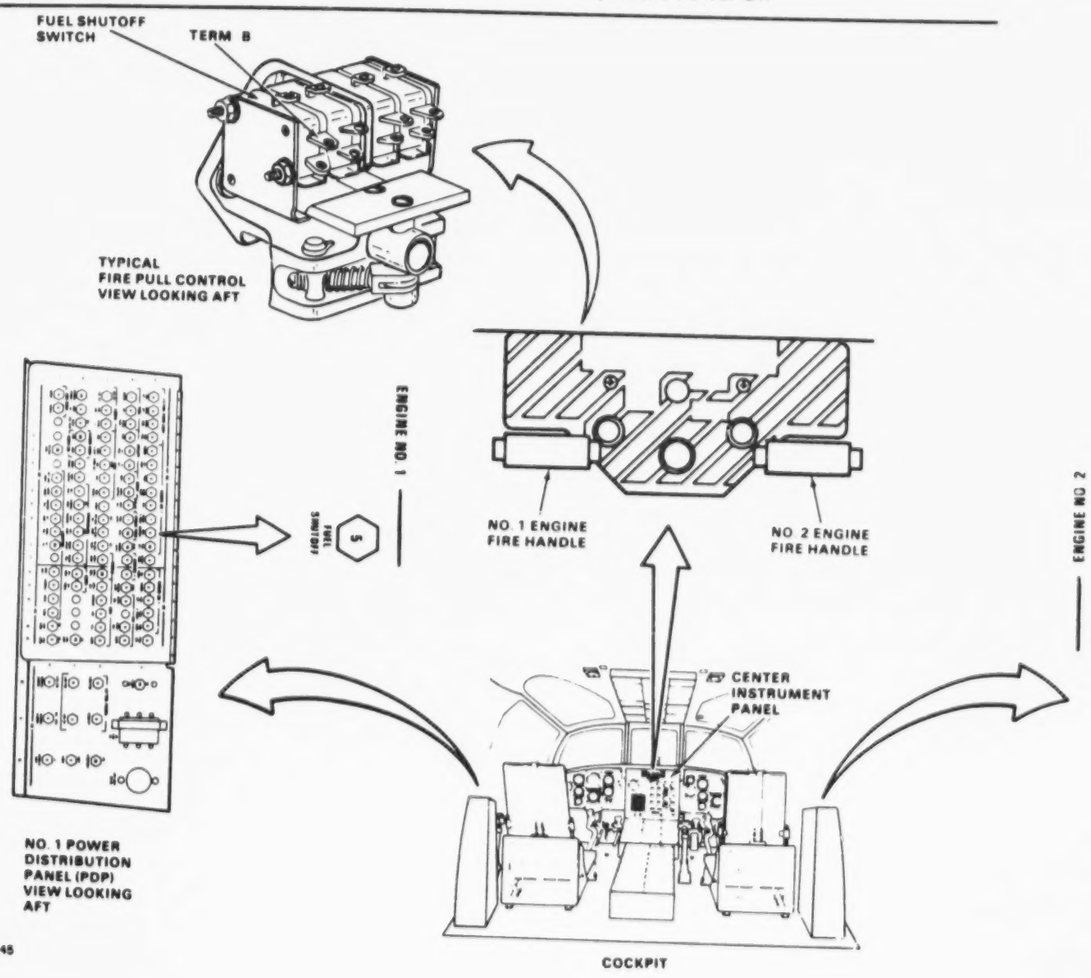
NO. 2 ENGINE FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL

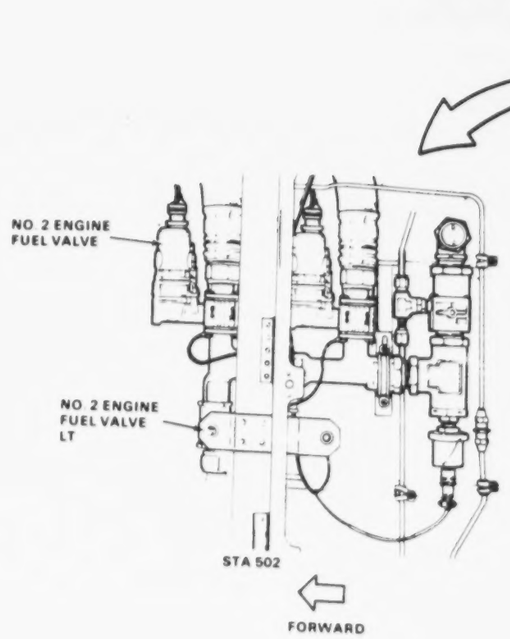

DISCONNECT PLUG 172P2 FROM NO. 2 ENGINE FUEL VALVE. CHECK FOR CONTINUITY BETWEEN PLUG 172P2 PIN C AND TERM 2 OF NO. 2 ENGINE FUEL VALVE LT. IS CONTINUITY PRESENT?
YES
REPLACE NO. 2 ENGINE FUEL VALVE.
NO
LOCATE OPEN IN WIRE W666-52-20 BETWEEN PLUG 172P2 AND NO. 2 ENGINE FUEL VALVE LT. REPAIR OR REPLACE WIRE AS REQUIRED.

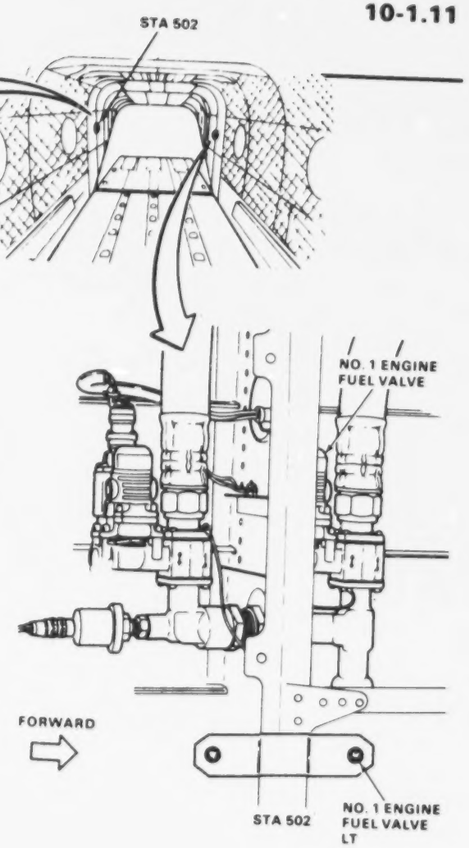
END OF TASK

10-1.11 ENGINE FUEL VALVE HANDLE IS NOT AT CLSD WITH FIRE HANDLE PULLED

FAULT ISOLATION PROCEDURE
INITIAL SETUP
Applicable Configurations:
All
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter
Materials:
None
Personnel Required:
68F20 Aircraft Electrician
References:
TM 55-1520-240-23
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off







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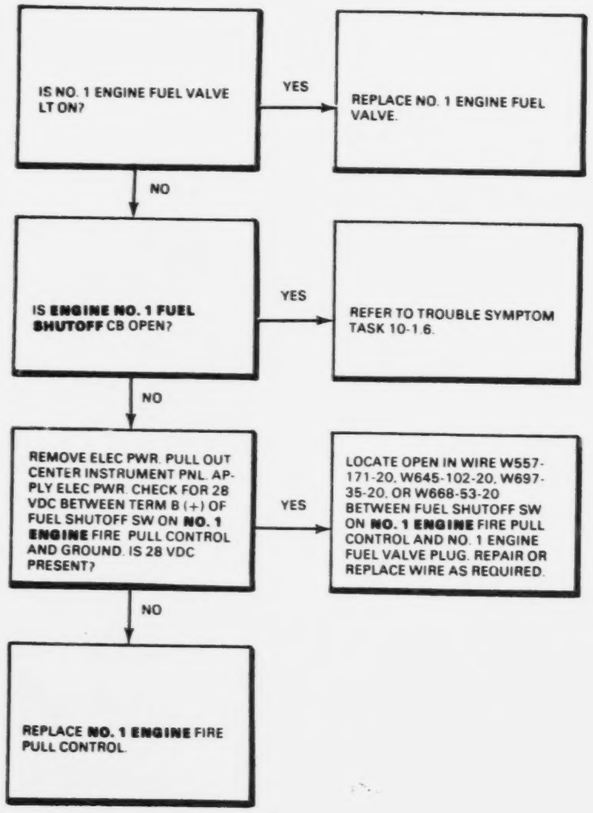
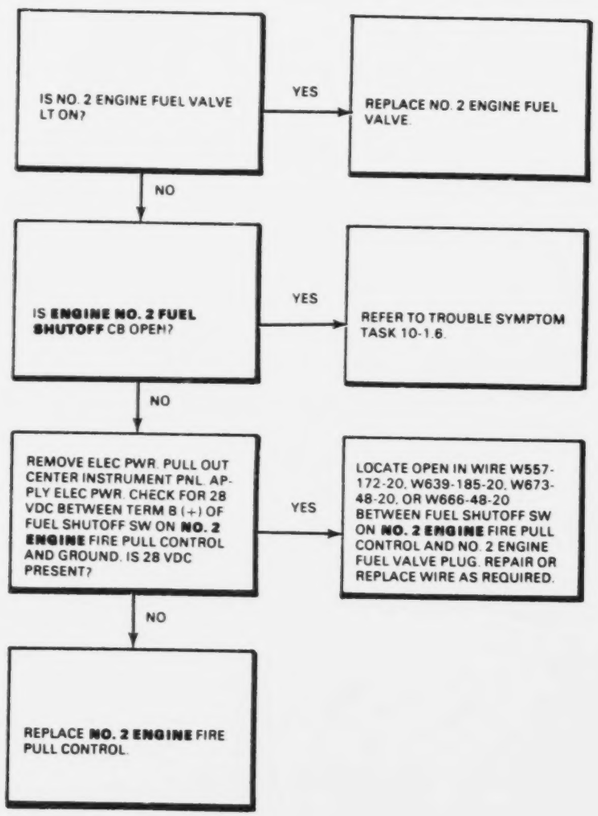
10-1.11 ENGINE FUEL VALVE HANDLE IS NOT AT CLSD WITH FIRE HANDLE PULLED (Continued)

NO. 1 ENGINE FUEL VALVE HANDLE IS NOT AT CLSD WITH NO. 1 ENGINE FIRE HANDLE PULLED


IS NO. 1 ENGINE FUEL VALVE LT ON?
YES
REPLACE NO. 1 ENGINE FUEL VALVE.
NO
IS ENGINE NO. 1 FUEL SHUTOFF CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 10-1.6.
NO
REMOVE ELEC PWR. PULL OUT CENTER INSTRUMENT PNL. APPLY ELEC PWR. CHECK FOR 28 VDC BETWEEN TERM B (+) OF FUEL SHUTOFF SW ON NO. 1 ENGINE FIRE PULL CONTROL AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W557-171-20, W645-102-20, W697-35-20, OR W668-53-20 BETWEEN FUEL SHUTOFF SW ON NO. 1 ENGINE FIRE PULL CONTROL AND NO. 1 ENGINE FUEL VALVE PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 1 ENGINE FIRE PULL CONTROL.

NO. 2 ENGINE FUEL VALVE HANDLE IS NOT AT CLSD WITH NO. 2 ENGINE FIRE HANDLED PULLED


IS NO. 2 ENGINE FUEL VALVE LT ON?
YES
REPLACE NO. 2 ENGINE FUEL VALVE.
NO
IS ENGINE NO. 2 FUEL SHUTOFF CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 10-1.6.
NO
REMOVE ELEC PWR. PULL OUT CENTER INSTRUMENT PNL. APPLY ELEC PWR. CHECK FOR 28 VDC BETWEEN TERM B (+) OF FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W557-172-20, W639-185-20, W673-48-20, OR W666-48-20 BETWEEN FUEL SHUTOFF SW ON NO. 2 ENGINE FIRE PULL CONTROL AND NO. 2 ENGINE FUEL VALVE PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 2 ENGINE FIRE PULL CONTROL.

END OF TASK

10-1.12 LEFT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

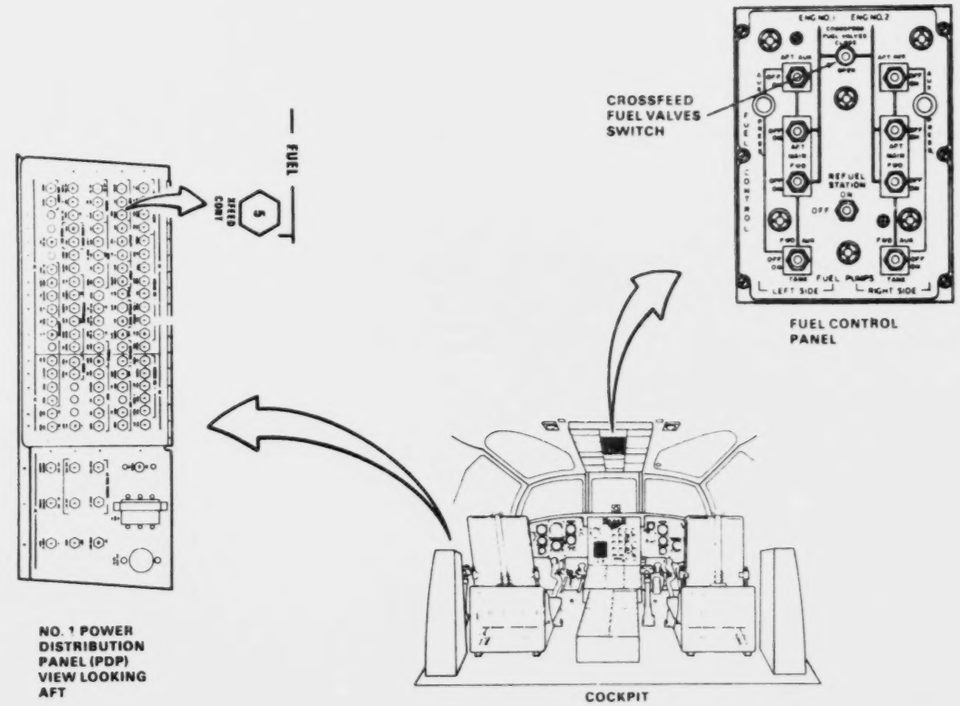
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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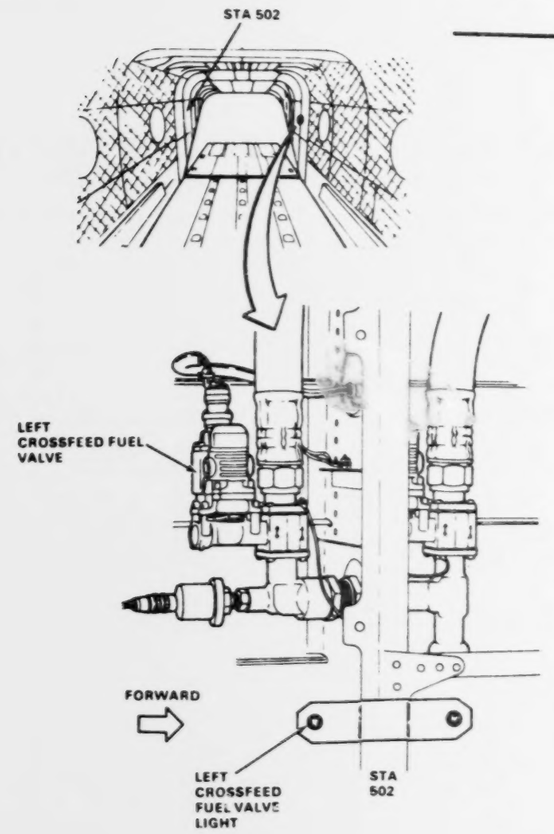

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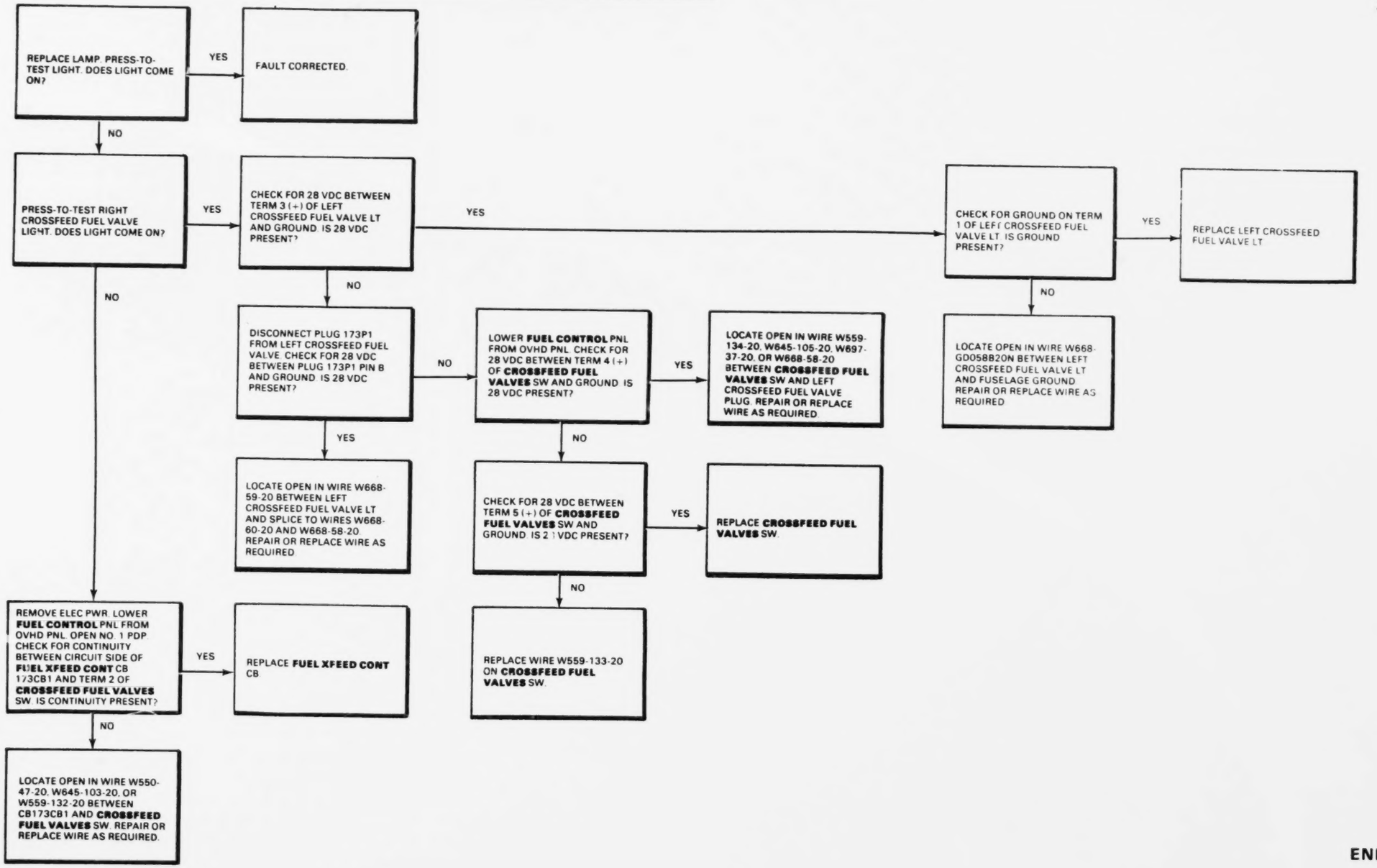
10-1.12 LEFT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST (Continued)


REPLACE LAMP. PRESS-TO-TEST LIGHT. DOES LIGHT COME ON?
YES
FAULT CORRECTED.
NO
PRESS-TO-TEST RIGHT CROSSFEED FUEL VALVE LIGHT. DOES LIGHT COME ON?
YES
CHECK FOR 28 VDC BETWEEN TERM 3 (+) OF LEFT CROSSFEED FUEL VALVE LT AND GROUND. IS 28 VDC PRESENT?
YES
CHECK FOR GROUND ON TERM 1 OF LEFT CROSSFEED FUEL VALVE LT. IS GROUND PRESENT?
YES
REPLACE LEFT CROSSFEED FUEL VALVE LT.
NO
LOCATE OPEN IN WIRE W668-GD058B20N BETWEEN LEFT CROSSFEED FUEL VALVE LT AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 173P1 FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR 28 VDC BETWEEN PLUG 173P1 PIN B AND GROUND. IS 28 VDC PRESENT?
NO
LOWER **FUEL CONTROL** PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 4 (+) OF **CROSSFEED FUEL VALVES** SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-134-20, W645-105-20, W697-37-20, OR W668-58-20 BETWEEN **CROSSFEED FUEL VALVES** SW AND LEFT CROSSFEED FUEL VALVE PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
LOCATE OPEN IN WIRE W668-59-20 BETWEEN LEFT CROSSFEED FUEL VALVE LT AND SPLICE TO WIRES W668-60-20 AND W668-58-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28 VDC BETWEEN TERM 5 (+) OF **CROSSFEED FUEL VALVES** SW AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE **CROSSFEED FUEL VALVES** SW.
NO
REPLACE WIRE W559-133-20 ON **CROSSFEED FUEL VALVES** SW.
NO
REMOVE ELEC PWR. LOWER **FUEL CONTROL** PNL FROM OVHD PNL. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF **FUEL XFEED CONT** CB 173CB1 AND TERM 2 OF **CROSSFEED FUEL VALVES** SW. IS CONTINUITY PRESENT?
YES
REPLACE **FUEL XFEED CONT** CB.
NO
LOCATE OPEN IN WIRE W550-47-20, W645-103-20, OR W559-132-20 BETWEEN CB173CB1 AND **CROSSFEED FUEL VALVES** SW. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.13 RIGHT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

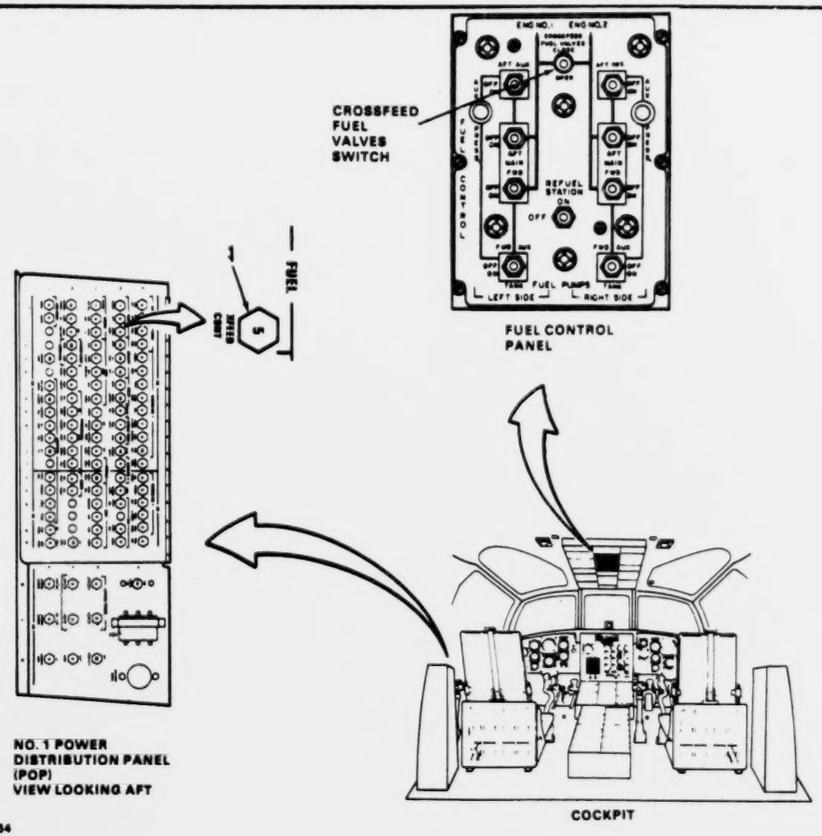
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

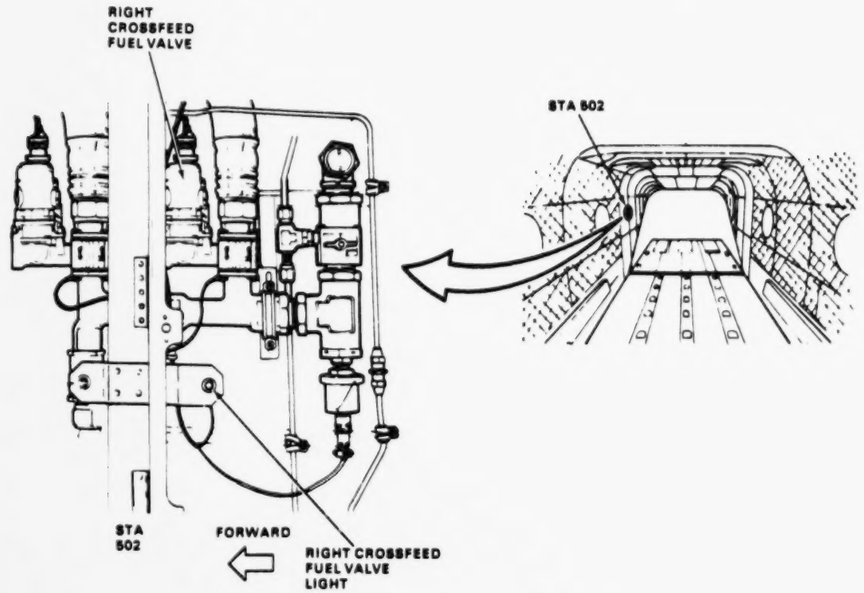
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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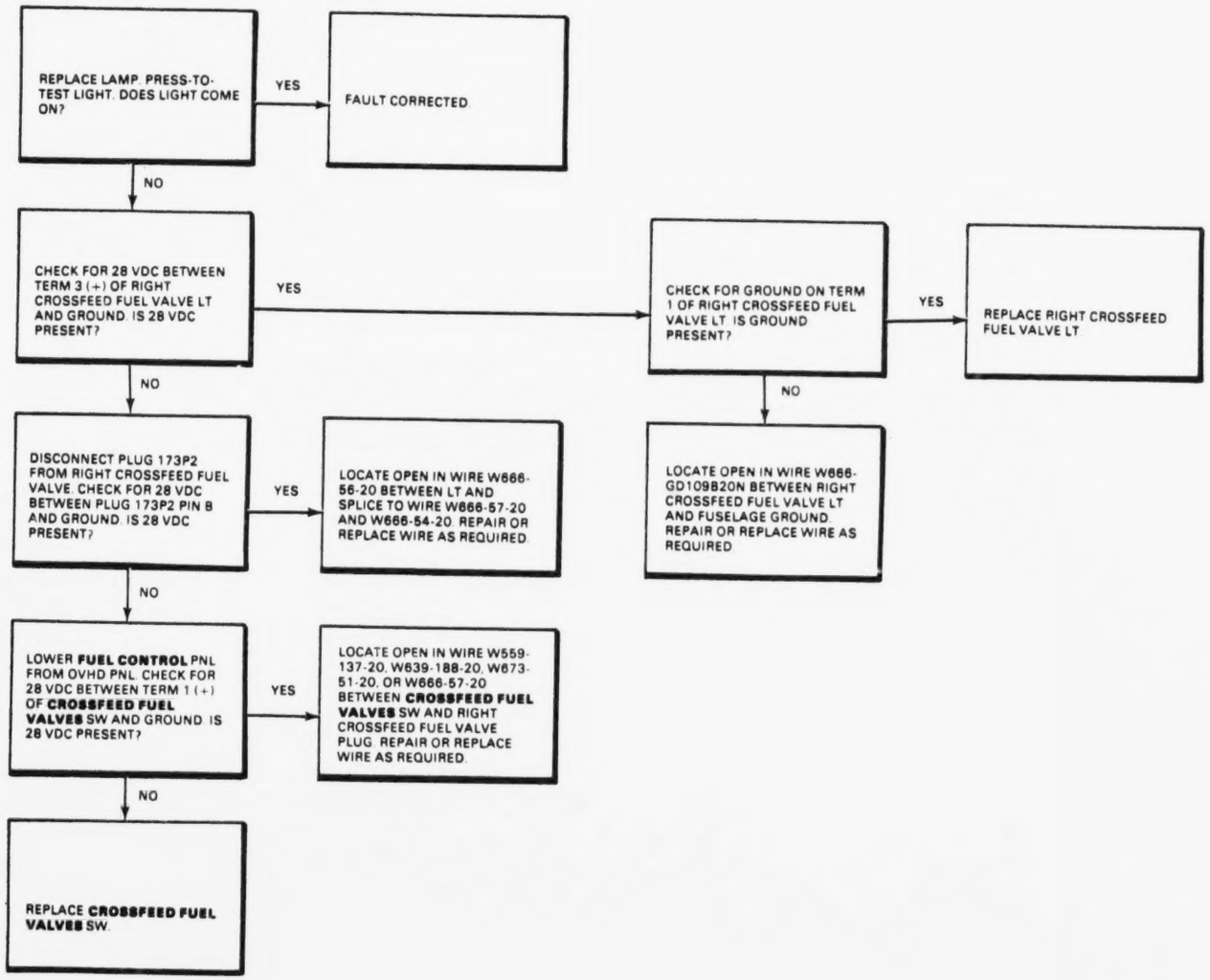
10-1.13 RIGHT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON DURING PRESS-TO-TEST (Continued)


REPLACE LAMP. PRESS-TO-TEST LIGHT. DOES LIGHT COME ON?
YES
FAULT CORRECTED.
NO
CHECK FOR 28 VDC BETWEEN TERM 3 (+) OF RIGHT CROSSFEED FUEL VALVE LT AND GROUND. IS 28 VDC PRESENT?
YES
CHECK FOR GROUND ON TERM 1 OF RIGHT CROSSFEED FUEL VALVE LT. IS GROUND PRESENT?
YES
REPLACE RIGHT CROSSFEED FUEL VALVE LT
NO
LOCATE OPEN IN WIRE W666-GD109B20N BETWEEN RIGHT CROSSFEED FUEL VALVE LT AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
NO
DISCONNECT PLUG 173P2 FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR 28 VDC BETWEEN PLUG 173P2 PIN B AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W666-56-20 BETWEEN LT AND SPLICE TO WIRE W666-57-20 AND W666-54-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER FUEL CONTROL PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 1 (+) OF CROSSFEED FUEL VALVES SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-137-20, W639-188-20, W673-51-20, OR W666-57-20 BETWEEN CROSSFEED FUEL VALVES SW AND RIGHT CROSSFEED FUEL VALVE PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CROSSFEED FUEL VALVES SW.

END OF TASK

10-1.14 CROSSFEED FUEL VALVE HANDLE IS NOT AT OPEN WITH CROSSFEED FUEL VALVES SWITCH AT OPEN

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

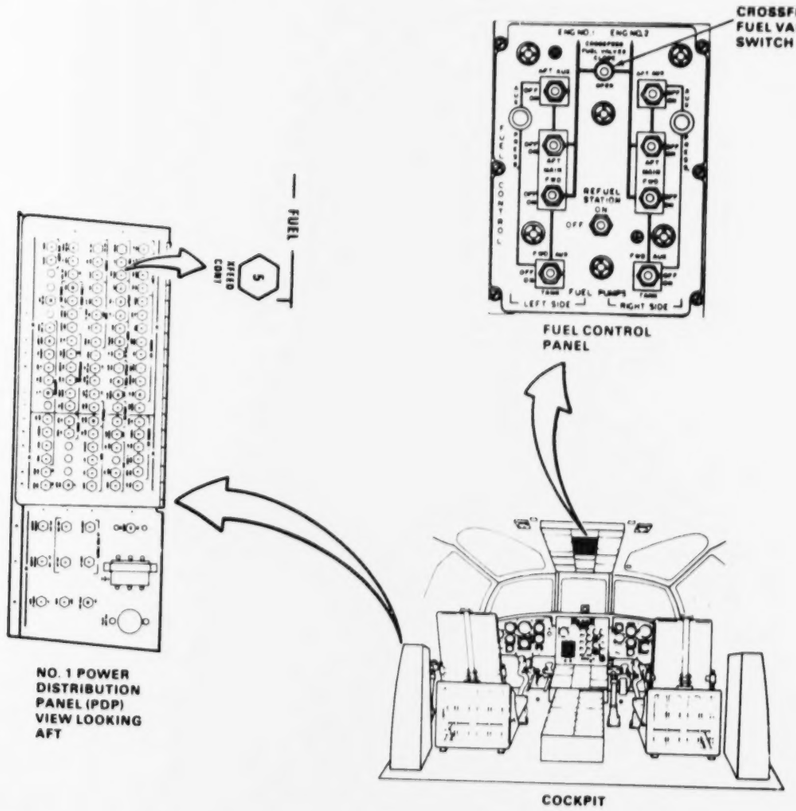
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

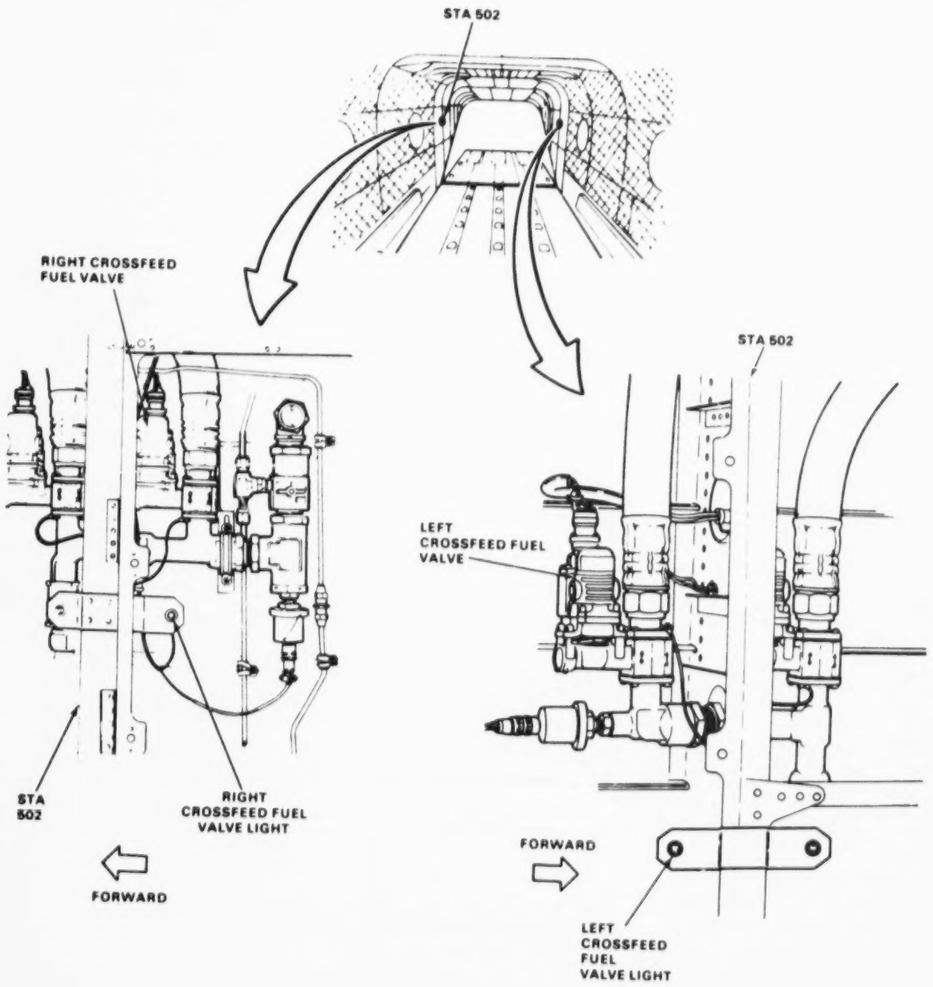
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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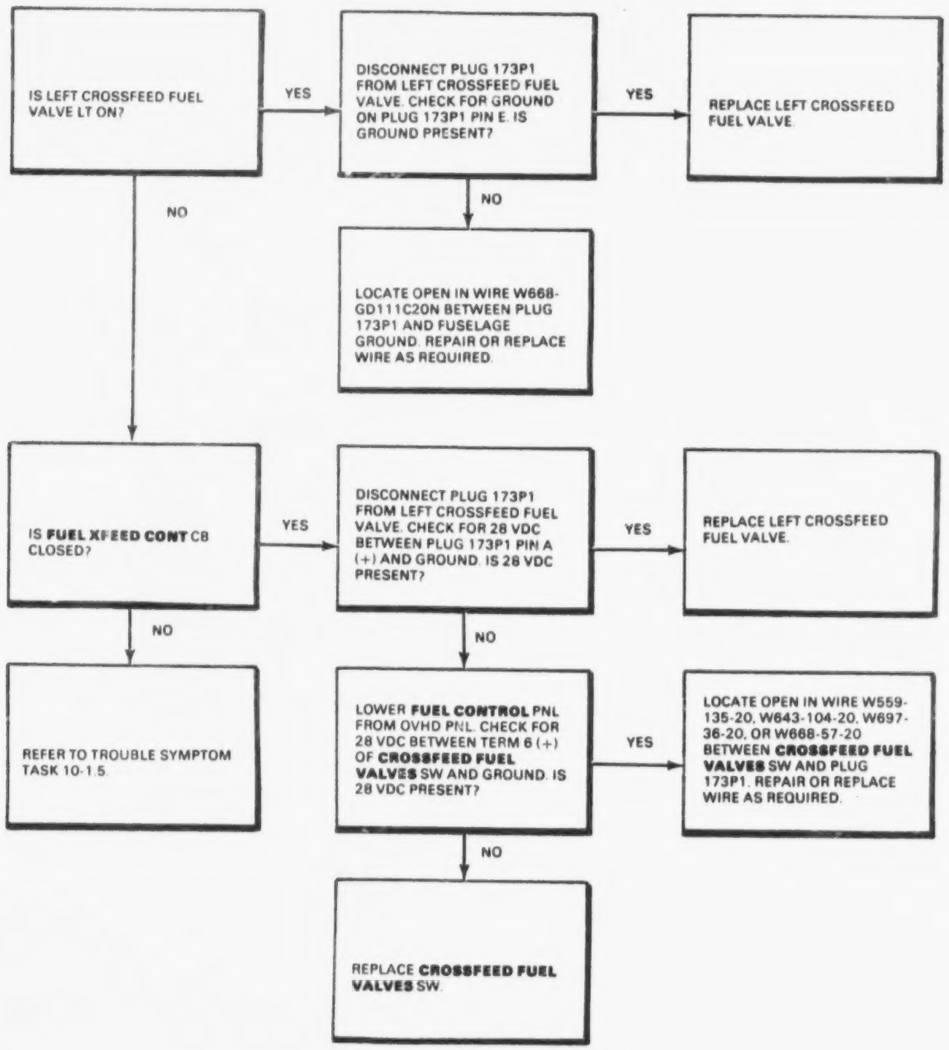
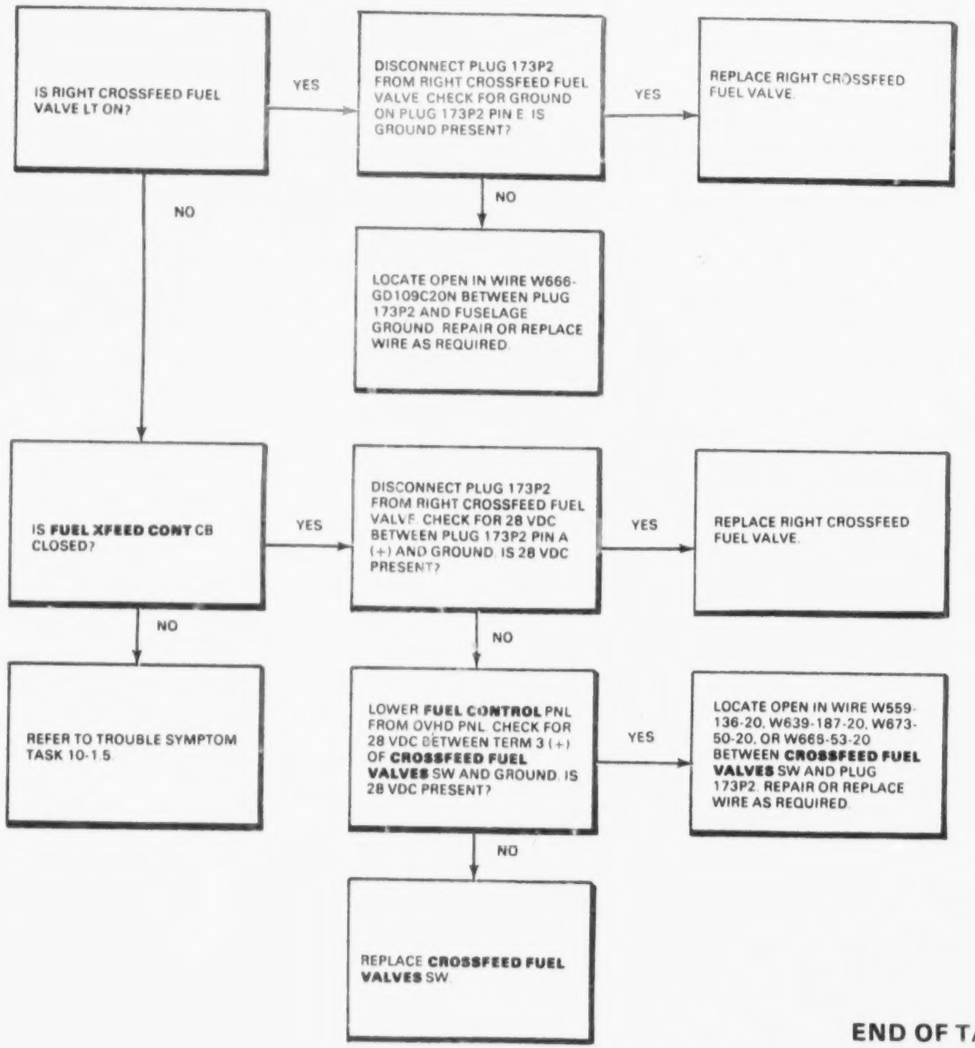
10-1.14 CROSSFEED FUEL VALVE HANDLE IS NOT AT OPEN WITH CROSSFEED FUEL VALVES SWITCH AT OPEN (Continued)

LEFT CROSSFEED FUEL VALVE HANDLE IS NOT AT OPEN WITH CROSSFEED FUEL VALVES SWITCH AT OPEN


IS LEFT CROSSFEED FUEL VALVE LT ON?
YES
DISCONNECT PLUG 173P1 FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P1 PIN E. IS GROUND PRESENT?
YES
REPLACE LEFT CROSSFEED FUEL VALVE.
NO
LOCATE OPEN IN WIRE W668-GD111C20N BETWEEN PLUG 173P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS FUEL XFEED CONT CB CLOSED?
YES
DISCONNECT PLUG 173P1 FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR 28 VDC BETWEEN PLUG 173P1 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE LEFT CROSSFEED FUEL VALVE.
NO
REFER TO TROUBLE SYMPTOM TASK 10-1.5.
NO
LOWER FUEL CONTROL PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 6 (+) OF CROSSFEED FUEL VALVES SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-135-20, W643-104-20, W697-36-20, OR W668-57-20 BETWEEN CROSSFEED FUEL VALVES SW AND PLUG 173P1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CROSSFEED FUEL VALVES SW.

RIGHT CROSSFEED FUEL VALVE HANDLE IS NOT AT OPEN WITH CROSSFEED FUEL VALVES SWITCH AT OPEN


IS RIGHT CROSSFEED FUEL VALVE LT ON?
YES
DISCONNECT PLUG 173P2 FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P2 PIN E. IS GROUND PRESENT?
YES
REPLACE RIGHT CROSSFEED FUEL VALVE.
NO
LOCATE OPEN IN WIRE W666-GD109C20N BETWEEN PLUG 173P2 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS FUEL XFEED CONT CB CLOSED?
YES
DISCONNECT PLUG 173P2 FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR 28 VDC BETWEEN PLUG 173P2 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE RIGHT CROSSFEED FUEL VALVE.
NO
REFER TO TROUBLE SYMPTOM TASK 10-1.5.
NO
LOWER FUEL CONTROL PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 3 (+) OF CROSSFEED FUEL VALVES SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-136-20, W639-187-20, W673-50-20, OR W665-53-20 BETWEEN CROSSFEED FUEL VALVES SW AND PLUG 173P2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CROSSFEED FUEL VALVES SW.

END OF TASK

10-1.15 CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

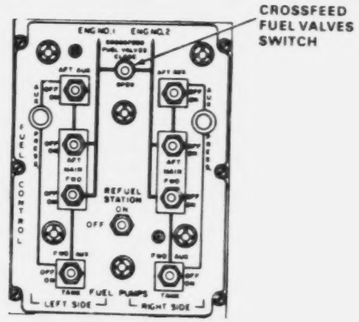
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

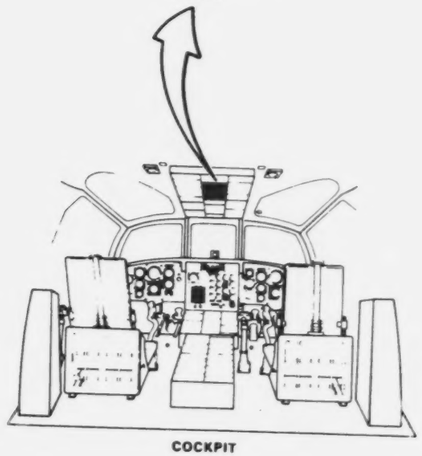
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

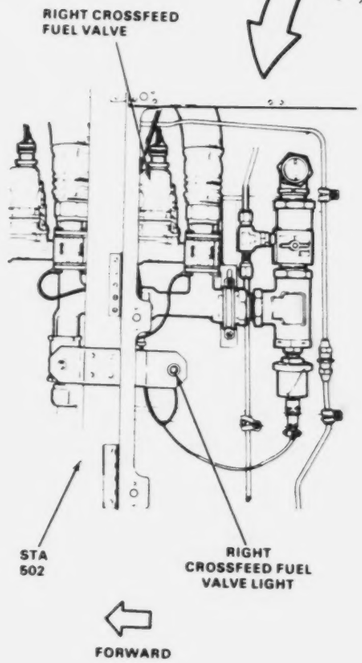
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

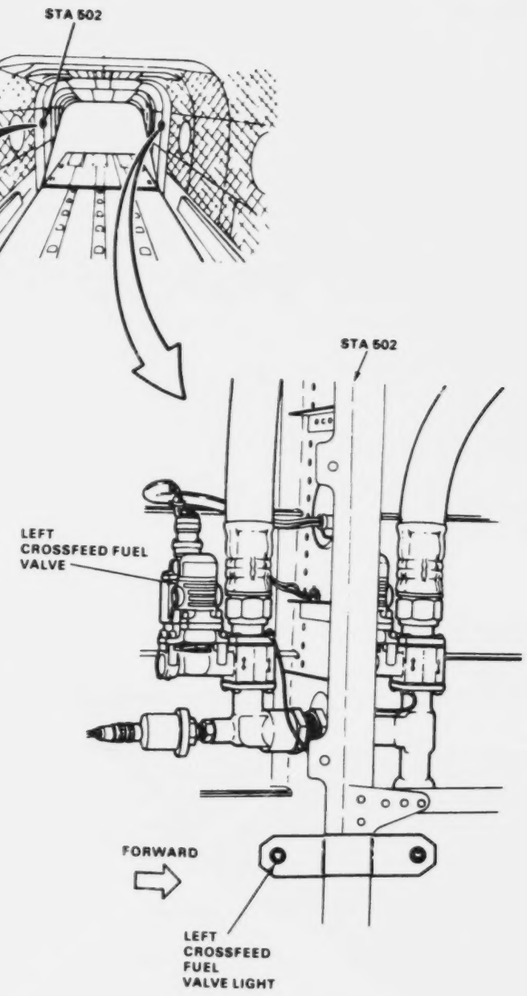


FUEL CONTROL PANEL



COCKPIT





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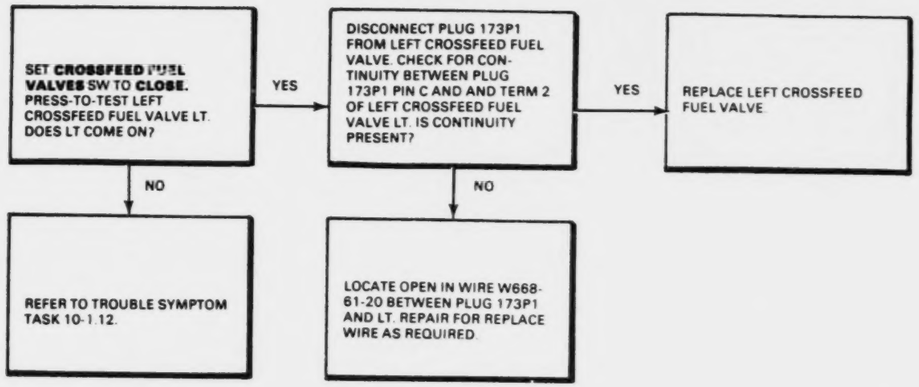
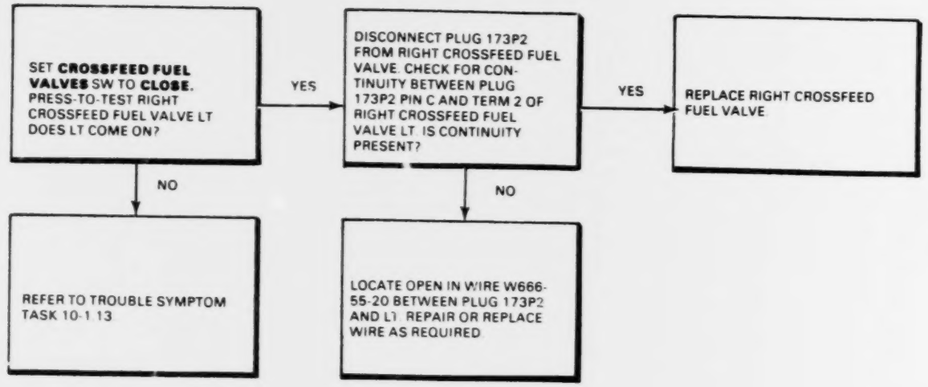
10-1.15 CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL (Continued)

LEFT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL


SET CROSSFEED FUEL VALVES SW TO CLOSE. PRESS-TO-TEST LEFT CROSSFEED FUEL VALVE LT. DOES LT COME ON?
YES
NO
DISCONNECT PLUG 173P1 FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR CONTINUITY BETWEEN PLUG 173P1 PIN C AND AND TERM 2 OF LEFT CROSSFEED FUEL VALVE LT. IS CONTINUITY PRESENT?
YES
NO
REPLACE LEFT CROSSFEED FUEL VALVE
REFER TO TROUBLE SYMPTOM TASK 10-1.12.
LOCATE OPEN IN WIRE W668-61-20 BETWEEN PLUG 173P1 AND LT. REPAIR FOR REPLACE WIRE AS REQUIRED.

RIGHT CROSSFEED FUEL VALVE LIGHT DOES NOT COME ON, VALVE OPERATION NORMAL


SET CROSSFEED FUEL VALVES SW TO CLOSE. PRESS-TO-TEST RIGHT CROSSFEED FUEL VALVE LT DOES LT COME ON?
YES
NO
DISCONNECT PLUG 173P2 FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR CONTINUITY BETWEEN PLUG 173P2 PIN C AND TERM 2 OF RIGHT CROSSFEED FUEL VALVE LT. IS CONTINUITY PRESENT?
YES
NO
REPLACE RIGHT CROSSFEED FUEL VALVE
REFER TO TROUBLE SYMPTOM TASK 10-1.13
LOCATE OPEN IN WIRE W666-55-20 BETWEEN PLUG 173P2 AND LT. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-1.16 CROSSFEED FUEL VALVE HANDLE IS NOT AT CLSD WITH CROSSFEED FUEL VALVES SWITCH AT CLOSE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

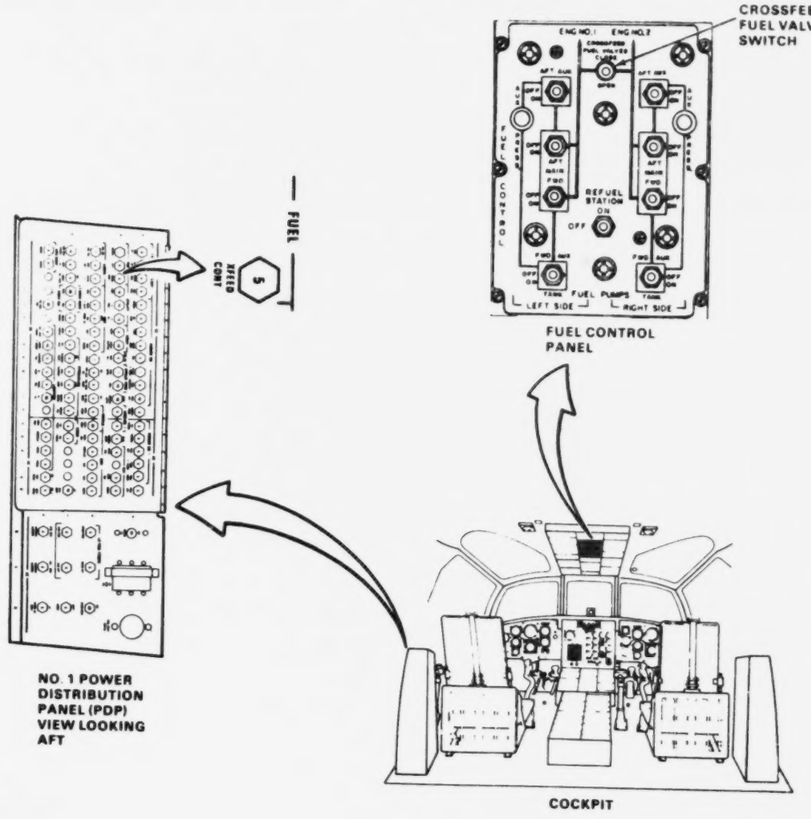
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

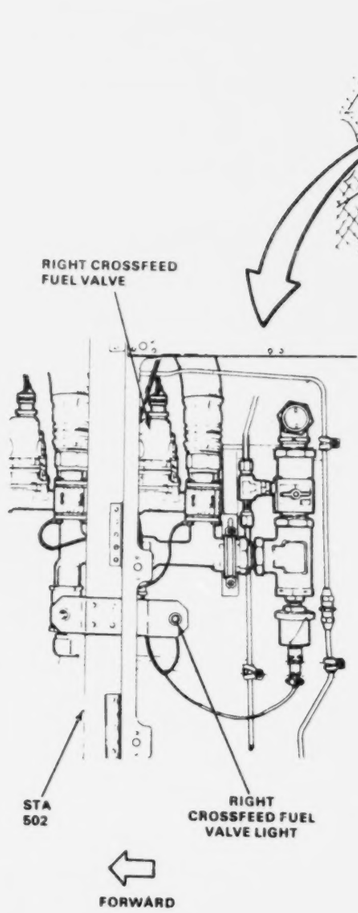
Materials:
None

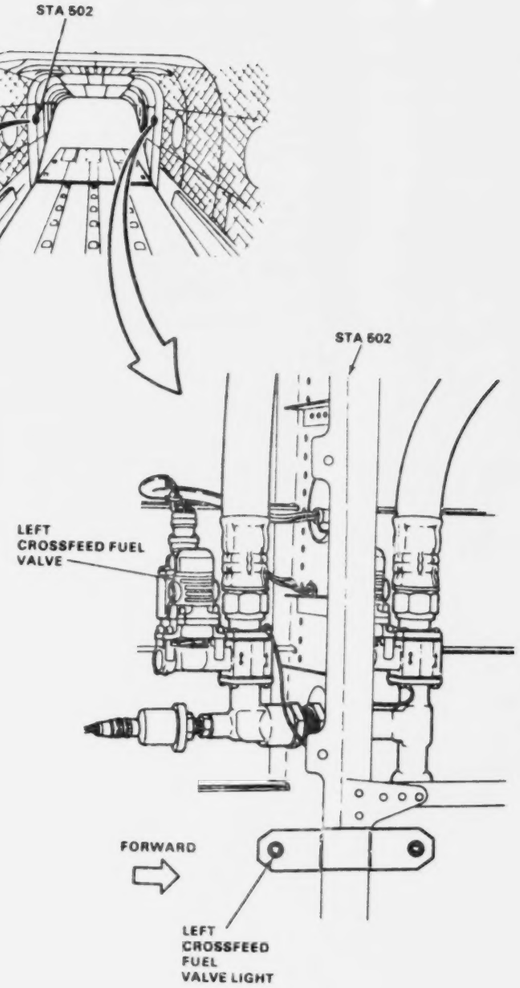
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off







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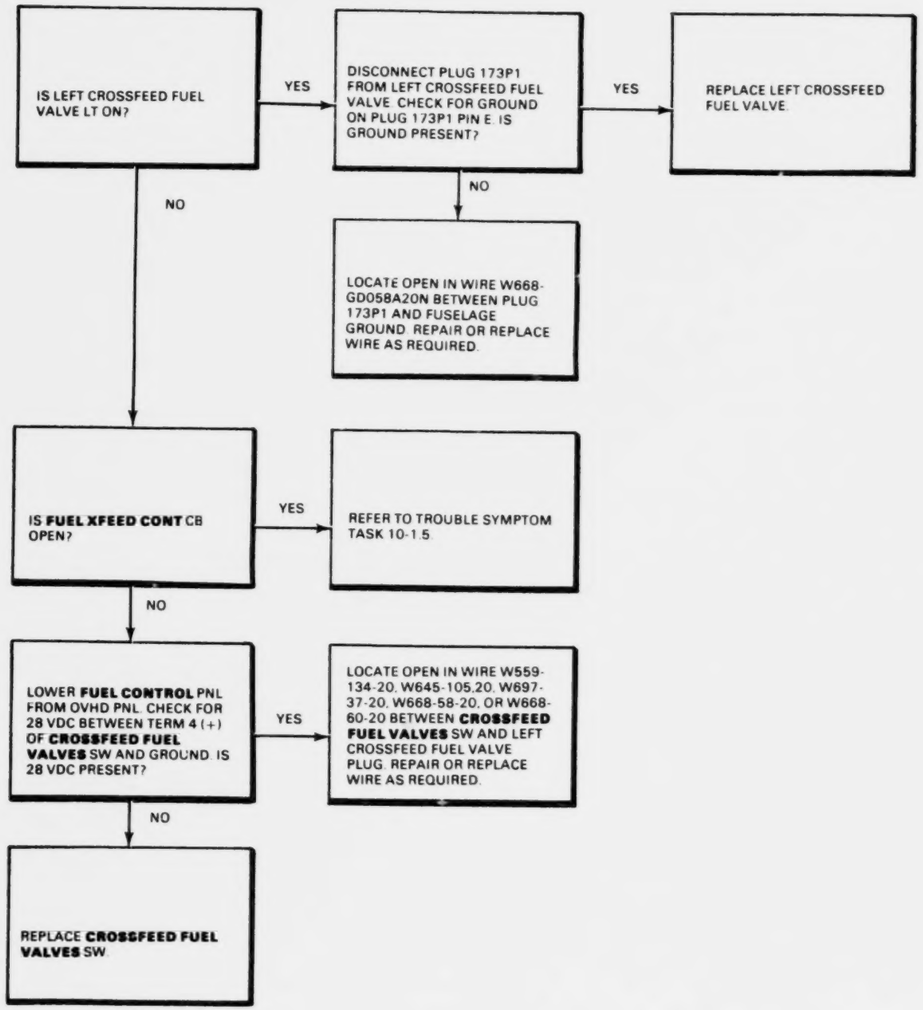
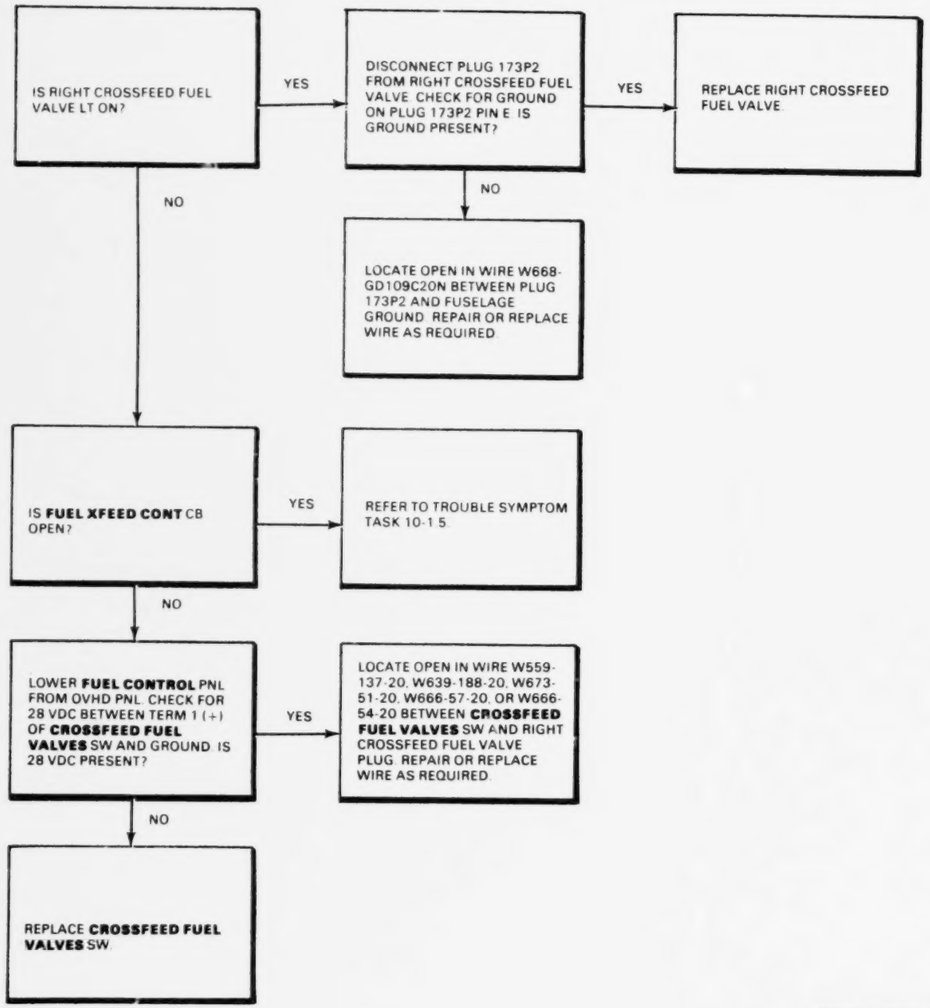
10-1.16 CROSSFEED FUEL VALVE HANDLE IS NOT AT CLSD WITH CROSSFEED FUEL VALVES SWITCH AT CLOSE (Continued)

LEFT CROSSFEED FUEL VALVE HANDLE IS NOT AT CLSD WITH CROSSFEED FUEL VALVES SWITCH AT CLOSE.

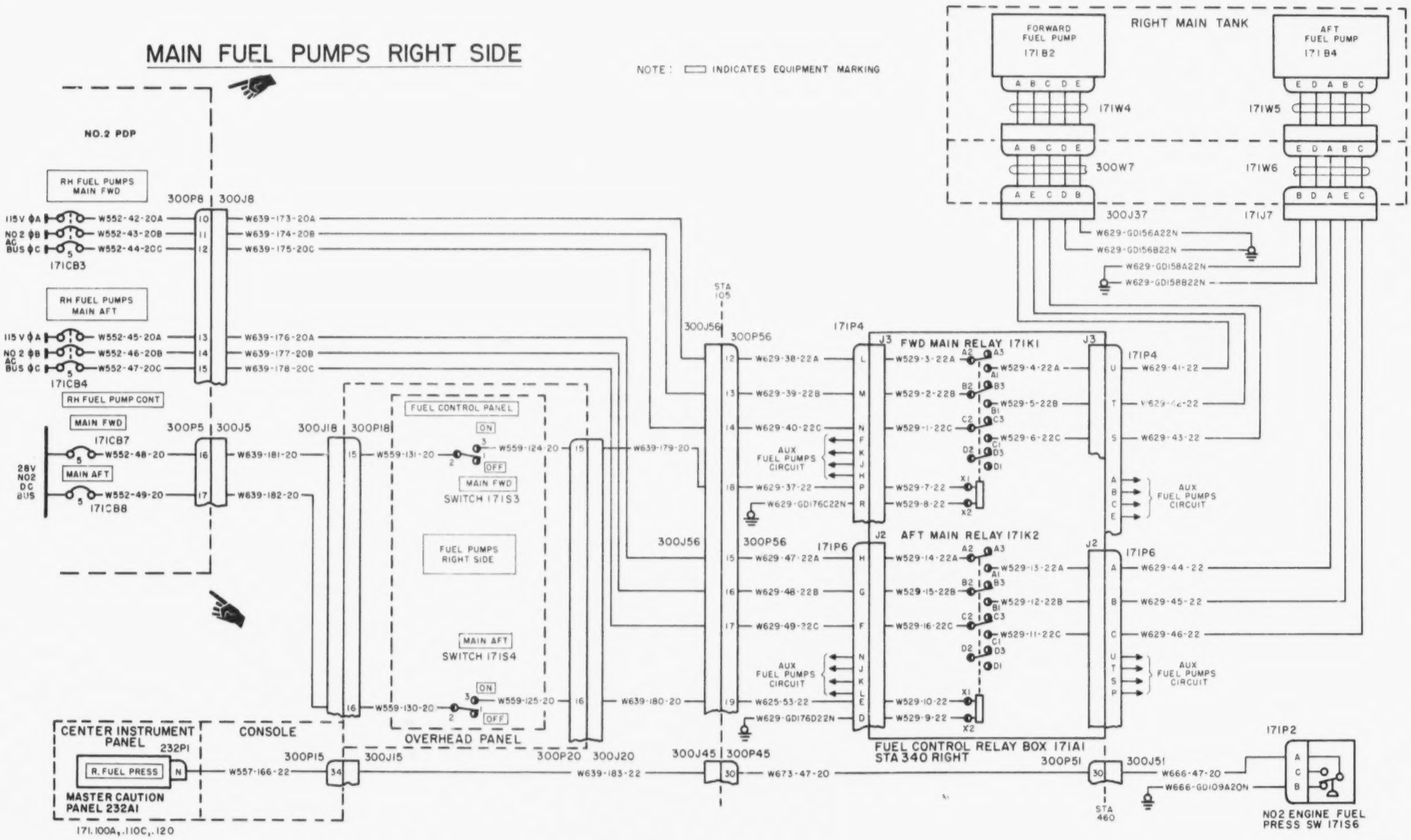

IS LEFT CROSSFEED FUEL VALVE LT ON?
YES
DISCONNECT PLUG 173P1 FROM LEFT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P1 PIN E. IS GROUND PRESENT?
YES
REPLACE LEFT CROSSFEED FUEL VALVE.
NO
LOCATE OPEN IN WIRE W668-GD058A20N BETWEEN PLUG 173P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS FUEL XFEED CONT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 10-1.5.
NO
LOWER FUEL CONTROL PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 4 (+) OF CROSSFEED FUEL VALVES SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-134-20, W645-105,20, W697-37-20, W668-58-20, OR W668-60-20 BETWEEN CROSSFEED FUEL VALVES SW AND LEFT CROSSFEED FUEL VALVE PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CROSSFEED FUEL VALVES SW.

RIGHT CROSSFEED FUEL VALVE HANDLE IS NOT AT CLSD WITH CROSSFEED FUEL VALVES SWITCH AT CLOSE.


IS RIGHT CROSSFEED FUEL VALVE LT ON?
YES
DISCONNECT PLUG 173P2 FROM RIGHT CROSSFEED FUEL VALVE. CHECK FOR GROUND ON PLUG 173P2 PIN E. IS GROUND PRESENT?
YES
REPLACE RIGHT CROSSFEED FUEL VALVE.
NO
LOCATE OPEN IN WIRE W668-GD109C20N BETWEEN PLUG 173P2 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS FUEL XFEED CONT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 10-1.5.
NO
LOWER FUEL CONTROL PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 1 (+) OF CROSSFEED FUEL VALVES SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-137-20, W639-188-20, W673-51-20, W666-57-20, OR W666-54-20 BETWEEN CROSSFEED FUEL VALVES SW AND RIGHT CROSSFEED FUEL VALVE PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CROSSFEED FUEL VALVES SW.

END OF TASK

10-2 FUEL BOOST PUMPS



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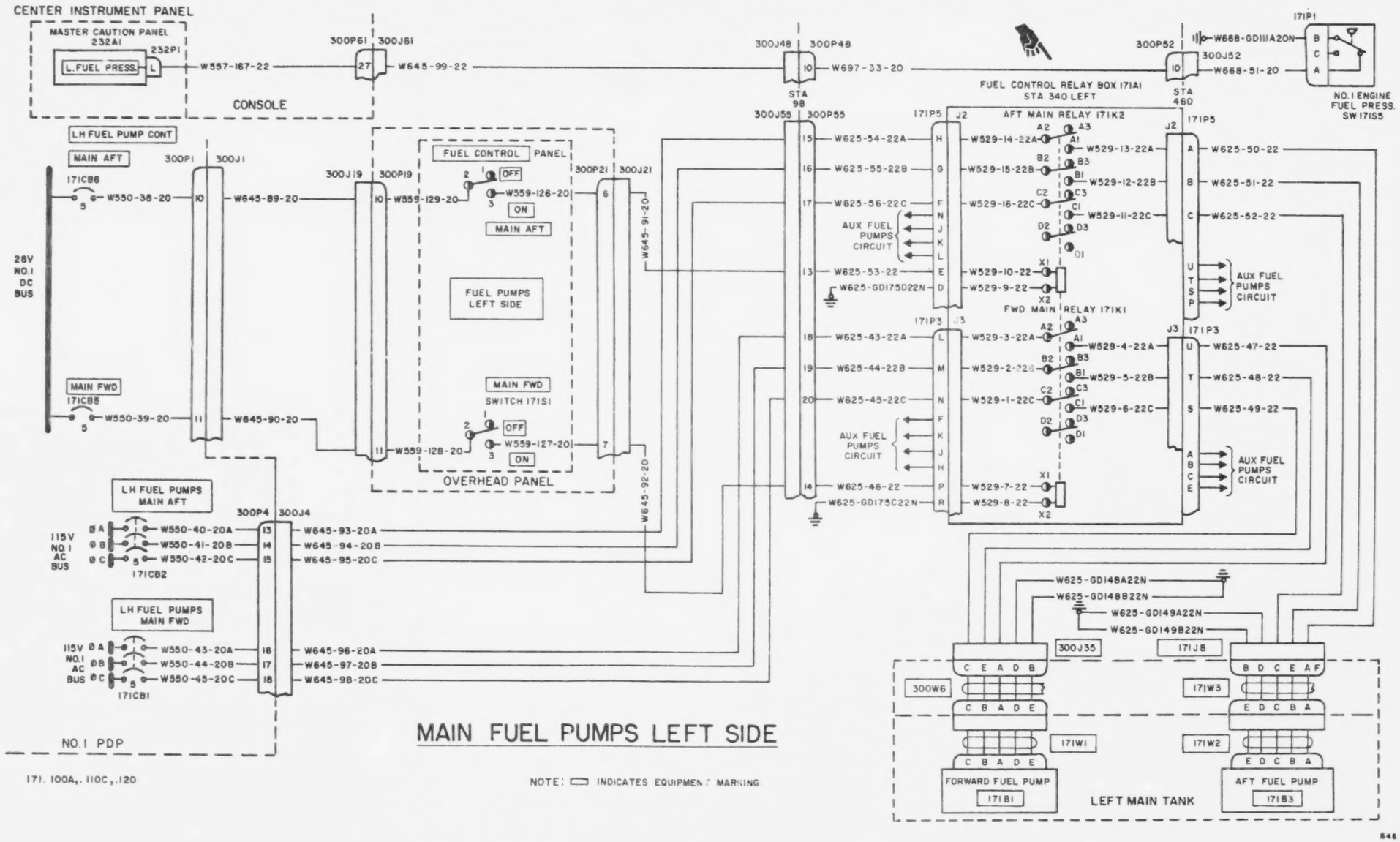

MAIN FUEL PUMPS LEFT SIDE

NOTE: ▭ INDICATES EQUIPMENT MARKING

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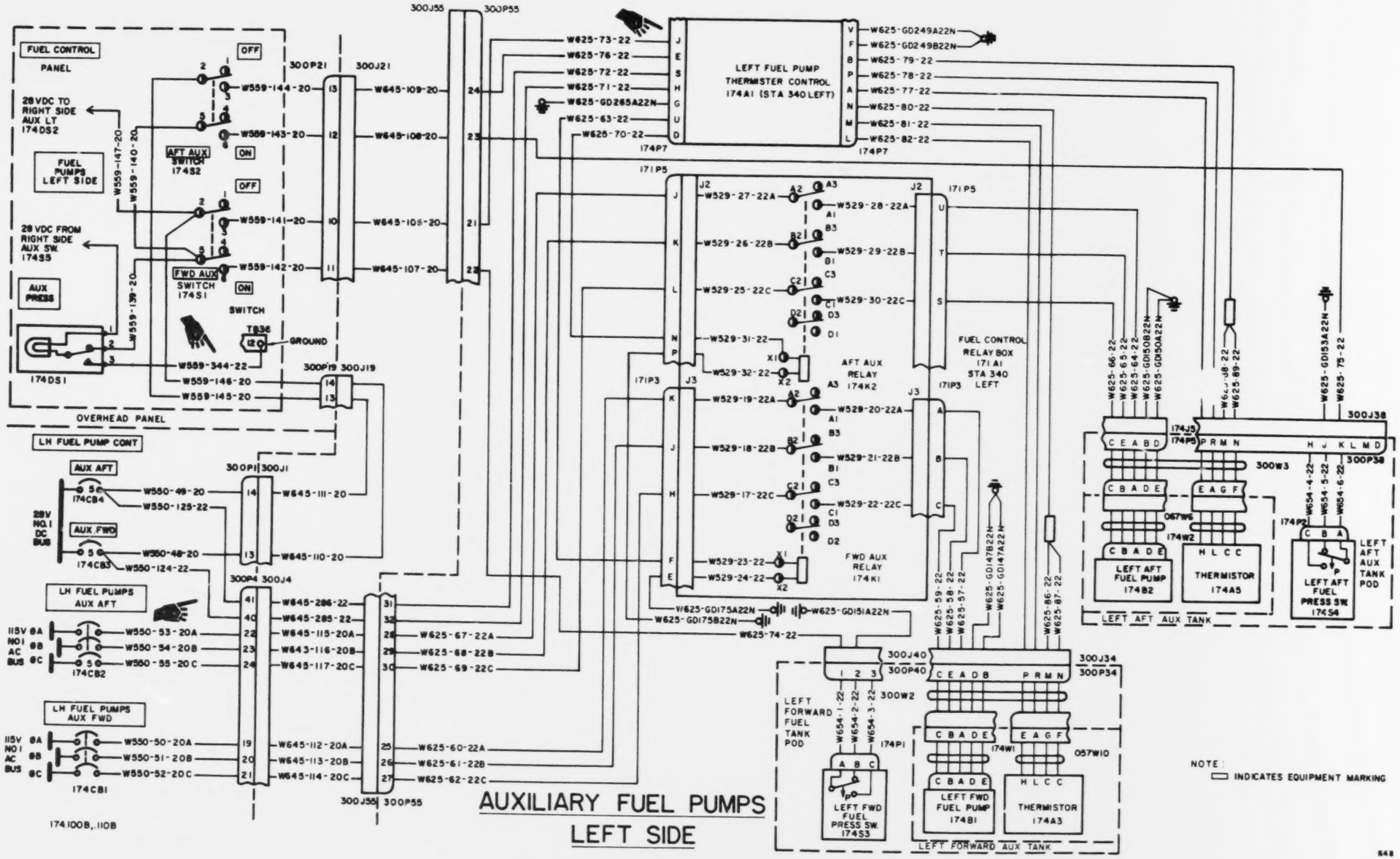

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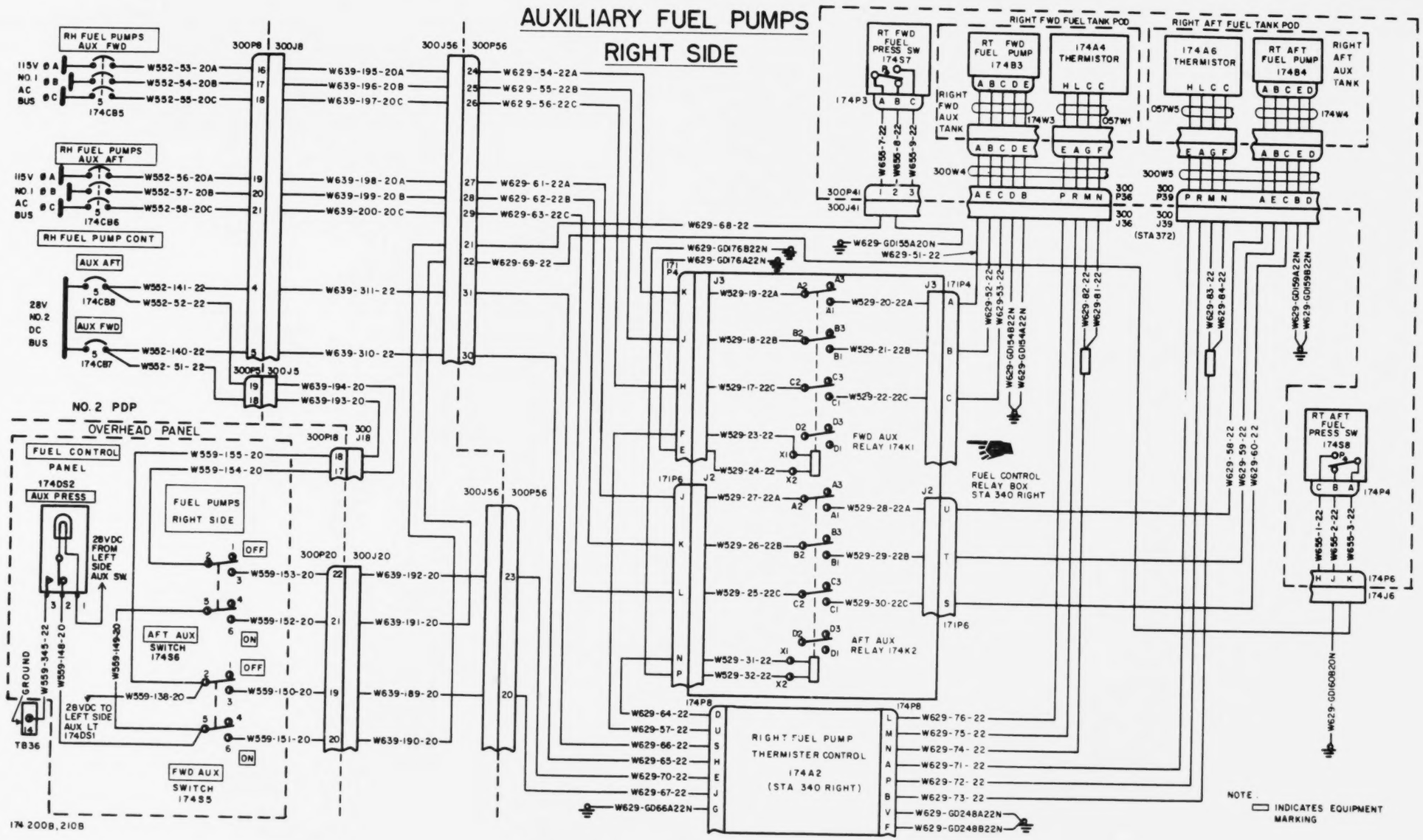
AUXILIARY FUEL PUMPS
RIGHT SIDE
RH FUEL PUMPS AUX FWD
115V ØA NO.1 ØB AC BUS ØC
W552-53-20A
W552-54-20B
W552-55-20C
174CB5
RH FUEL PUMPS AUX AFT
W552-56-20A
W552-57-20B
W552-58-20C
174CB6
RH FUEL PUMP CONT
AUX AFT
28V NO.2 DC BUS
W552-141-22
W552-52-22
174CB8
AUX FWD
W552-140-22
W552-51-22
174CB7
300P8 300J8
W639-195-20A
W639-196-20B
W639-197-20C
W639-198-20A
W639-199-20B
W639-200-20C
W639-311-22
W639-310-22
300P5 300J5
W639-194-20
W639-193-20
300J56 300P56
W629-54-22A
W629-55-22B
W629-56-22C
W629-61-22A
W629-62-22B
W629-63-22C
W629-68-22
W629-69-22
NO. 2 PDP
OVERHEAD PANEL
FUEL CONTROL PANEL
174DS2
AUX PRESS
28VDC FROM LEFT SIDE AUX SW
W559-155-20
W559-154-20
300P18 300J18
FUEL PUMPS RIGHT SIDE
OFF
ON
W559-153-20
W559-152-20
AFT AUX SWITCH 174S6
W559-150-20
W559-151-20
FWD AUX SWITCH 174S5
W559-138-20
28VDC TO LEFT SIDE AUX LT 174DS1
W559-345-22
W559-146-20
W559-149-20
GROUND
T836
300P20 300J20
W639-192-20
W639-191-20
W639-189-20
W639-190-20
300J56 300P56
W629-GD176B22N
W629-GD176A22N
W629-GD155A20N
W629-51-22
171P4
J3
W529-19-22A
W529-18-22B
W529-17-22C
W529-23-22
W529-24-22
W529-20-22A
W529-21-22B
W529-22-22C
FWD AUX RELAY 174K1
171P6 J2
W529-27-22A
W529-26-22B
W529-25-22C
W529-31-22
W529-32-22
W529-28-22A
W529-29-22B
W529-30-22C
AFT AUX RELAY 174K2
FUEL CONTROL RELAY BOX STA 340 RIGHT
174P8
W629-64-22
W629-57-22
W629-66-22
W629-65-22
W629-70-22
W629-67-22
W629-GD66A22N
RIGHT FUEL PUMP THERMISTER CONTROL 174A2 (STA 340 RIGHT)
W629-76-22
W629-75-22
W629-74-22
W629-71-22
W629-72-22
W629-73-22
W629-GD248A22N
W629-GD248B22N
RIGHT FWD FUEL TANK POD
RT FWD FUEL PRESS SW 174S7
174P3
W655-7-22
W655-8-22
W655-9-22
300P41
300J41
RT FWD FUEL PUMP 174B3
174A4 THERMISTOR
RIGHT FWD AUX TANK
174W3
057W1
300W4
300 P36
300 J36
(STA 372)
W629-52-22
W629-53-22
W629-GD154B22N
W629-GD154A22N
W629-82-22
W629-81-22
RIGHT AFT FUEL TANK POD
174A6 THERMISTOR
RT AFT FUEL PUMP 17484
RIGHT AFT AUX TANK
057W5
174W4
300W5
300 P39
300 J39
W629-83-22
W629-84-22
W629-GD159A22N
W629-GD159B22N
RT AFT FUEL PRESS SW 174S8
174P4
W655-1-22
W655-2-22
W655-3-22
174P6
174J6
W629-GD160B20N
W629-58-22
W629-59-22
W629-60-22
174 2008, 2108
NOTE:
INDICATES EQUIPMENT MARKING
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END OF TASK

10-2.2 FUEL BOOST PUMP SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

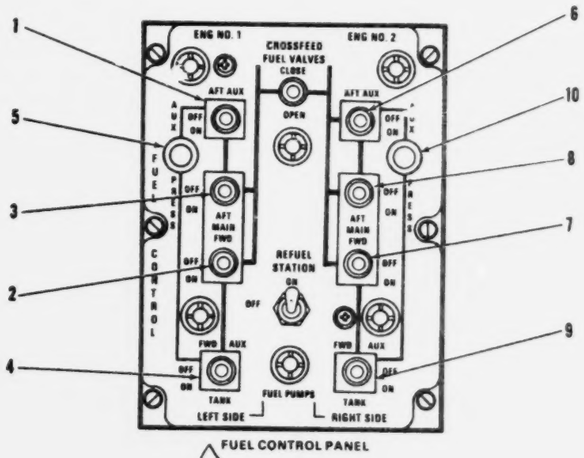
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

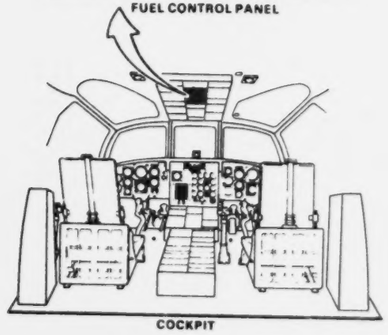
Personnel Required:
Aircraft Electrician

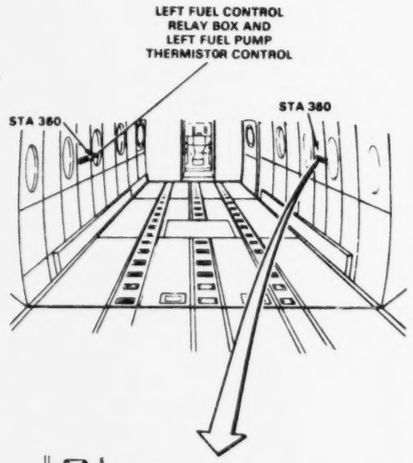
References:
TM 55-1520-240-23

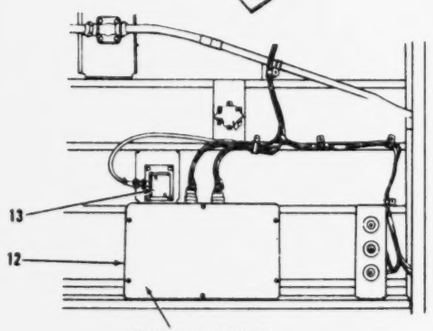
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Left and Right Forward Landing Gear Access Panels Open
Left and Right Aft Intertank Pod Panels Open



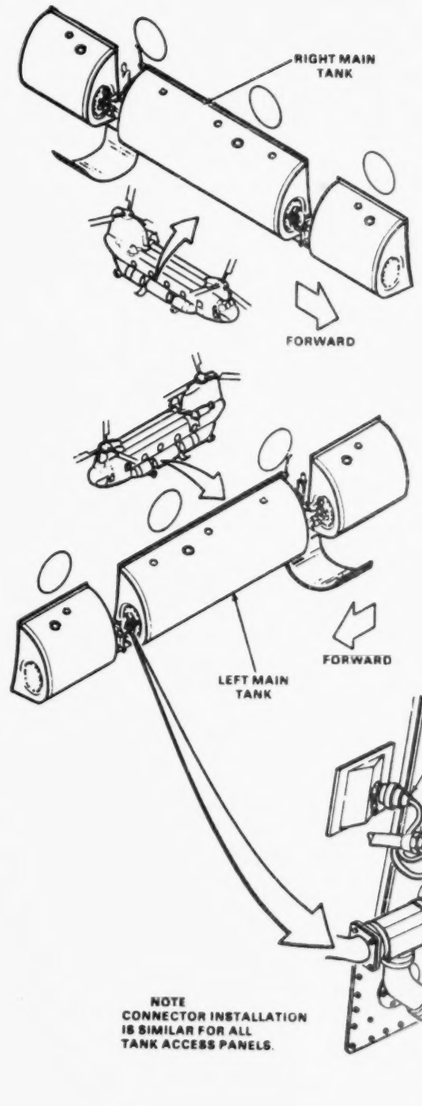
FUEL CONTROL PANEL


COCKPIT





RIGHT FUEL CONTROL RELAY BOX AND RIGHT FUEL PUMP THERMISTOR CONTROL SHOWN. LEFT FUEL CONTROL RELAY BOX AND LEFT FUEL PUMP THERMISTOR CONTROL SIMILAR



NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.

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10-2.2 FUEL BOOST PUMP SYSTEM VISUAL CHECK (Continued)

TASK	RESULT
1. On **FUEL CONTROL** panel, check **LEFT SIDE AFT AUX, FWD** and **AFT MAIN,** and **FWD AUX** boost pump switches (1, 2, 3, and 4).	If switches (1, 2, 3, and 4) are loose or damaged, tighten or replace them as required.
2. On **FUEL CONTROL** panel, check **LEFT SIDE AUX PRESS** light (5).	If light (5) is loose or damaged, tighten or replace it as required.
3. On **FUEL CONTROL** panel, check **RIGHT SIDE AFT AUX, FWD** and **AFT MAIN,** and **FWD AUX** boost pump switches (6, 7, 8, and 9).	If switches (6, 7, 8, and 9) are loose or damaged, tighten or replace them as required.
4. On **FUEL CONTROL** panel, check **RIGHT SIDE AUX PRESS** light (10).	If light (10) is loose or damaged, tighten or replace it as required.
5. On left FWD AUX tank access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
6. On left MAIN tank forward access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
7. On left MAIN tank aft access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
8. On left AFT AUX tank access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
9. On right FWD AUX tank access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
10. On right MAIN tank forward access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
11. On right MAIN tank aft access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
12. On right AFT AUX tank access panel, check wiring and connector (11).	If connector (11) is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace as required.
13. **Check right fuel control relay box (12).**	If box (12) is loose or damaged, tighten or replace it as required. If either connector to box (12) is loose or damaged, tighten or replace it as required. If wiring to either connector is damaged, repair or replace it as required.
14. **Check right fuel pump thermister control (13).**	If control (13) is loose or damaged, tighten or replace it as required. If connector to control is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.
15. Repeat steps 13 and 14 for left fuel control relay box (12) and left fuel pump thermister control (13).	

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Left and Right Forward Landing Gear Access Panels Closed
Left and Right Aft Intertank Pod Panels Closed

END OF TASK

10-2.3 FUEL BOOST PUMP SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

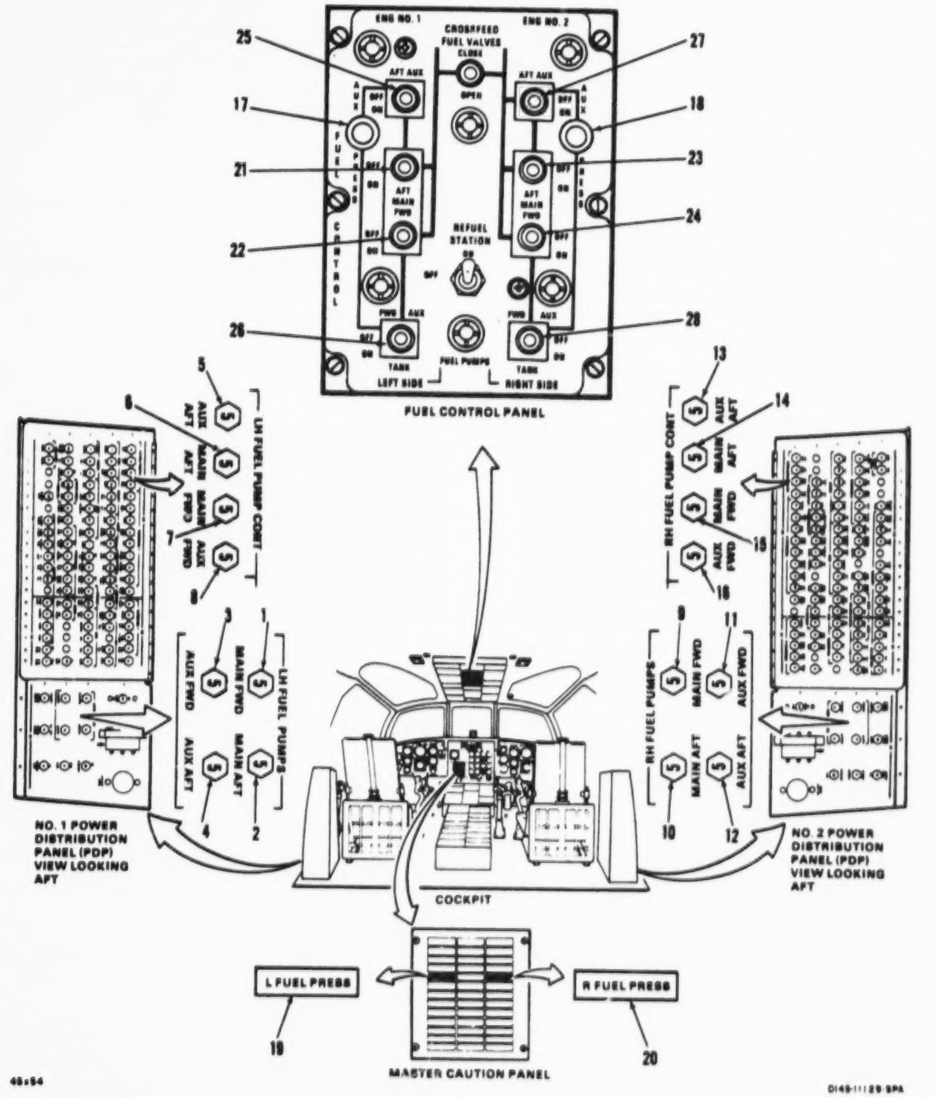
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
100C0 Army Rotary-Wing Aviator

References:
TM 55-1520-240-23
TM 55-1520-240-10

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Visual Check of Fuel Boost Pump System Performed (Task 10-2.2)



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10-2.3 FUEL BOOST PUMP SYSTEM OPERATIONAL CHECK (Continued)

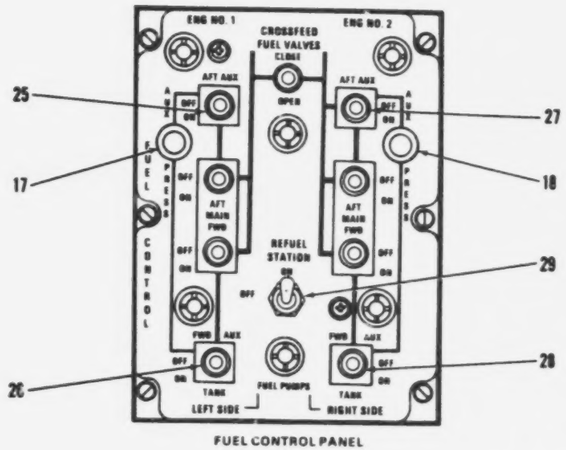
TASK	RESULT
1. **Check** that **LH FUEL PUMPS MAIN FWD, MAIN AFT, AUX FWD,** and **AUX AFT AC circuit breakers (1, 2, 3, and 4) are closed.**	If circuit breaker (1) is open, close it. If it opens again, go to Task 10-2.4. If circuit breaker (2) is open, close it. If it opens again, go to Task 10-2.5. If circuit breaker (3) is open, close it. If it opens again, go to Task 10-2.6. If circuit breaker (4) is open, close it. If it opens again, go to Task 10-2.7.
2. **Check** that **LH FUEL PUMP CONT AUX AFT, MAIN AFT, MAIN FWD,** and **AUX FWD DC circuit breakers (5, 6, 7, and 8) are closed.**	If circuit breaker (5) is open, close it. If it opens again, go to Task 10-2.8. If circuit breaker (6) is open, close it. If it opens again, go to Task 10-2.9. If circuit breaker (7) is open, close it. If it opens again, go to Task 10-2.10. If circuit breaker (8) is open, close it. If it opens again, go to Task 10-2.11.
3. **Check** that **RH FUEL PUMPS MAIN FWD, MAIN AFT, AUX FWD,** and **AUX AFT AC circuit breakers (9, 10, 11, and 12) are closed.**	If circuit breaker (9) is open, close it. If it opens again, go to Task 10-2.12. If circuit breaker (10) is open, close it. If it opens again, go to Task 10-2.13. If circuit breaker (11) is open, close it. If it opens again, go to Task 10-2.14. If circuit breaker (12) is open, close it. If it opens again, go to Task 10-2.15.
4. **Check** that **RH FUEL PUMP CONT AUX AFT, MAIN AFT, MAIN FWD,** and **AUX FWD, DC circuit breakers (13, 14, 15, and 16) are closed.**	If circuit breaker (13) is open, close it. If it opens again, go to Task 10-2.16. If circuit breaker (14) is open, close it. If it opens again, go to Task 10-2.17. If circuit breaker (15) is open, close it. If it opens again, go to Task 10-2.18. If circuit breaker (16) is open, close it. If it opens again, go to Task 10-2.19.
5. **Check** that **all FUEL PUMP switches (21, 22, 23, 24, 25, 26, 27, and 28) on FUEL CONTROL PANEL are set to OFF.**	If switches are ON, set them to OFF.
6. **Press and release LEFT SIDE AUX PRESSURE light (17).**	AUX PRESSURE light (17) shall momentarily come on. If it does not, go to Task 10-2.20.
7. **Press and release RIGHT SIDE AUX PRESSURE light (18).**	AUX PRESSURE light (18) shall momentarily come on. If it does not, go to Task 10-2.20.

TASK	RESULT
WARNING **An inoperative fuel pump in main tanks cannot be detected unless the following methods, steps 8 thru 17, are utilized. Flight operations with an undeteced pump failure can result in engine flameout when operative pump fails. This could result in loss of helicopter lift.**	
8. **Check** that **L FUEL PRESS capsule (19) is lit.**	If capsule (19) is not lit, go to Task 10-2.21.
9. **Check** that **R FUEL PRESS capsule (20) is lit.**	If capsule (20) is not lit, go to Task 10-2.21.
10. Have pilot start engines and stabilize rotors at ground idle. **Set eight FUEL PUMP switches (21 through 28) to OFF.**	
11. **Set LEFT SIDE MAIN AFT FUEL PUMP switch (21) to ON.**	Capsule (19) shall go out. If not, go to Task 10-2.22.
12. **Set LEFT SIDE MAIN AFT FUEL PUMP switch (21) to OFF.**	Capsule (19) shall come on. If not, go to Task 10-2.21.
13. **Set LEFT SIDE MAIN FWD FUEL PUMP switch (22) to ON.**	Capsule (19) shall go out. If not, go to Task 10-2.23.
14. **Set LEFT SIDE MAIN FWD FUEL PUMP switch (22) to OFF.**	Capsule (19) shall come on. If not, go to Task 10-2.21.
15. **Set RIGHT SIDE MAIN FWD FUEL PUMP switch (24) to ON.**	Capsule (20) shall go out. If not, go to Task 10-2.24.
16. **Set RIGHT SIDE MAIN FWD FUEL PUMP switch (24) to OFF.**	Capsule (20) shall come on. If not, go to Task 10-2.21.
17. **Set RIGHT SIDE MAIN AFT FUEL PUMP switch (23) to ON.**	Capsule (20) shall go out. If not, go to Task 10-2.25.
18. **Set RIGHT SIDE MAIN AFT FUEL PUMP switch (23) to OFF.**	Capsule (20) shall come on. If not, go to Task 10-2.21.

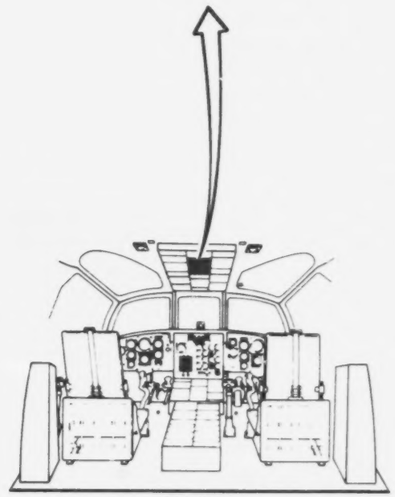
GO TO NEXT PAGE

10-2.3 FUEL BOOST PUMP SYSTEM OPERATIONAL CHECK (Continued)

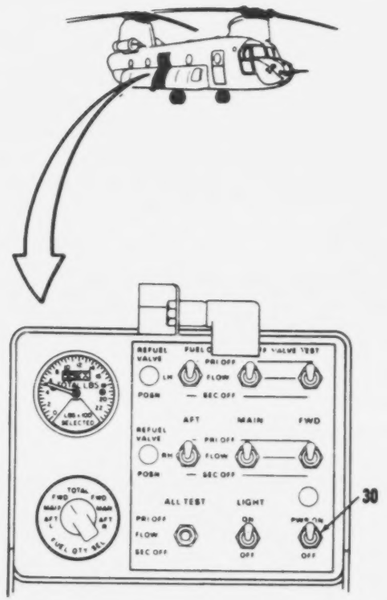
TASK	RESULT
19. **Set LEFT SIDE AFT AUX FUEL PUMP switch (25) to ON.**	AUX PRESS light (17) shall stay out. If it is on, go to task 10-2.26.
20. **Set LEFT SIDE AFT AUX FUEL PUMP switch (25) to OFF.**	
21. **Set LEFT SIDE FWD AUX FUEL PUMP switch (26) to ON.**	AUX PRESS light (17) shall stay out. If it is on, go to task 10-2.27.
22. **Set LEFT SIDE FWD AUX FUEL PUMP switch (26) to OFF.**	
23. **Set RIGHT SIDE AFT AUX FUEL PUMP switch (27) to ON.**	AUX PRESS light (18) shall stay out. If it is on, go to task 10-2.28.
24. **Set RIGHT SIDE AFT AUX FUEL PUMP switch (27) to OFF.**	
25. **Set RIGHT SIDE FWD AUX FUEL PUMP switch (28) to ON.**	AUX PRESS light (18) shall stay out. If it is on, go to task 10-2.29.
26. **Set RIGHT SIDE FWD AUX FUEL PUMP switch (28) to OFF.**	
27. Have pilot shut down engines.	
CHECK AUX TANK FUEL PUMP SHUTOFF (NO FUEL)	
28. Check that fuel level in main tank is low enough to accept transfer of fuel from associated auxiliary tanks.	If too much fuel is in main tank, remove quantity required. Refer to TM 55-1520-240-23.
29. (Deleted.)	
30. (Deleted.)	



FUEL CONTROL PANEL



COCKPIT



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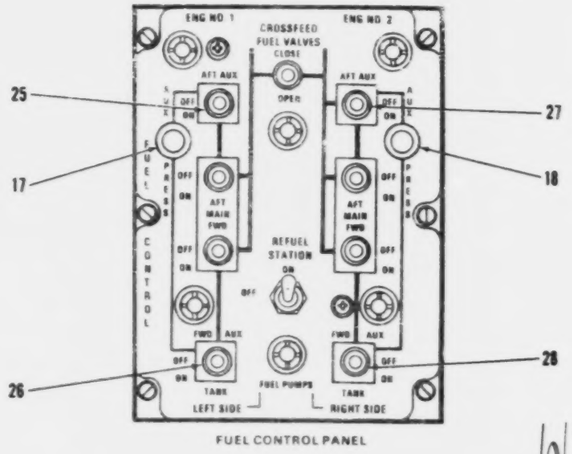
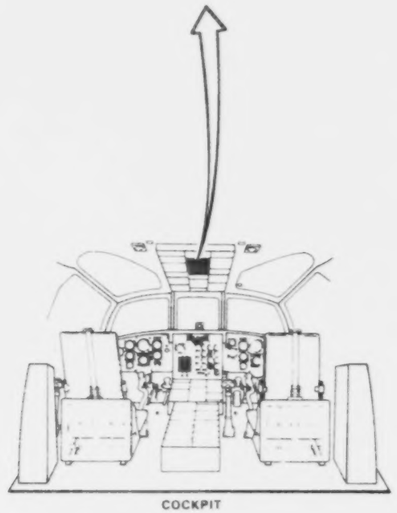
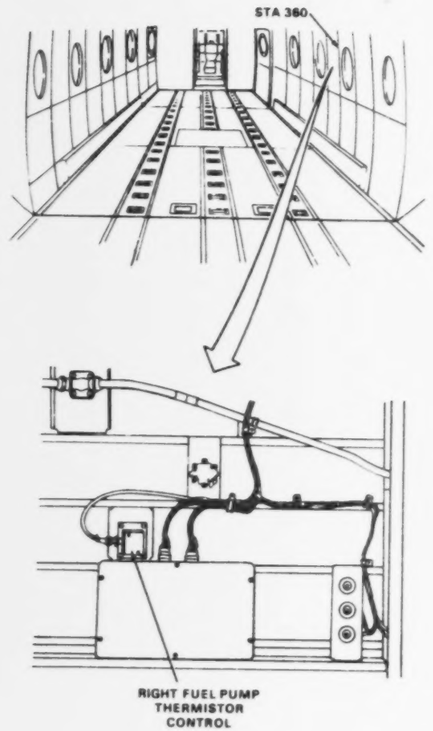
10-2.3 FUEL BOOST PUMP SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
31. **Set RIGHT SIDE FWD AUX FUEL PUMP switch (28) to ON.** Have helper standby right side fwd aux tank and listen for operation of boost pump.	AUX PRESS light (18) will go out. If not, go to task 10-2.29. Fuel will transfer from RIGHT SIDE FWD AUX tank to RIGHT SIDE MAIN TANK. AUX PRESS light (18) will come on when RIGHT SIDE FWD AUX tank is depleted. The fuel pump will shut off automatically. If fuel pump continues running after AUX PRESS light comes on and tank is empty, replace right side thermistor control box.
32. **Set RIGHT SIDE AFT AUX FUEL PUMP switch (27) to ON.** Have helper standby right side aft aux tank and listen for operation of boost pump.	AUX PRESS light (18) will go out. If not, go to task 10-2.28. Fuel will transfer from RIGHT SIDE AFT AUX tank to RIGHT SIDE MAIN TANK. AUX PRESS light (18) will come on when RIGHT SIDE AFT AUX tank is depleted. The fuel pump will shutoff automatically. If fuel pump continues running after AUX PRESS light comes on and tank is empty, replace right side thermistor control box.



FUEL CONTROL PANEL





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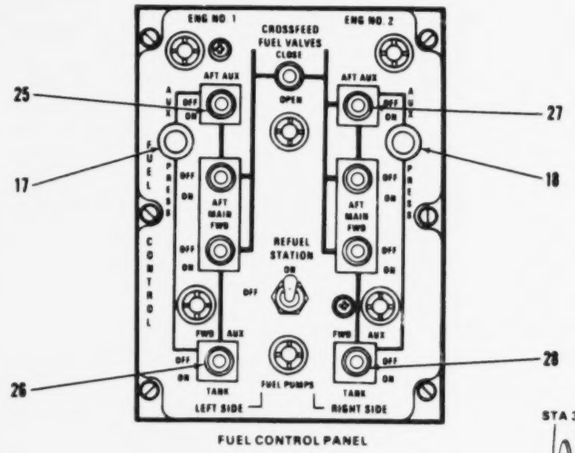
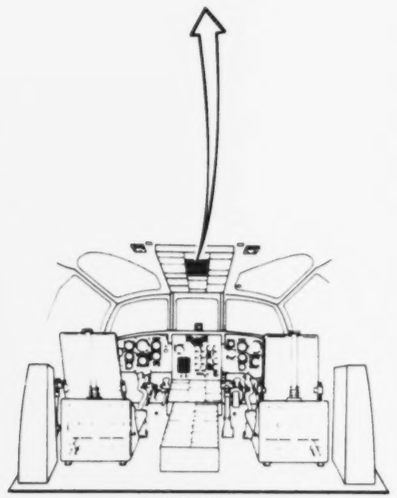
10-2.3 FUEL BOOST PUMP SYSTEM OPERATIONAL CHECK (Continued)

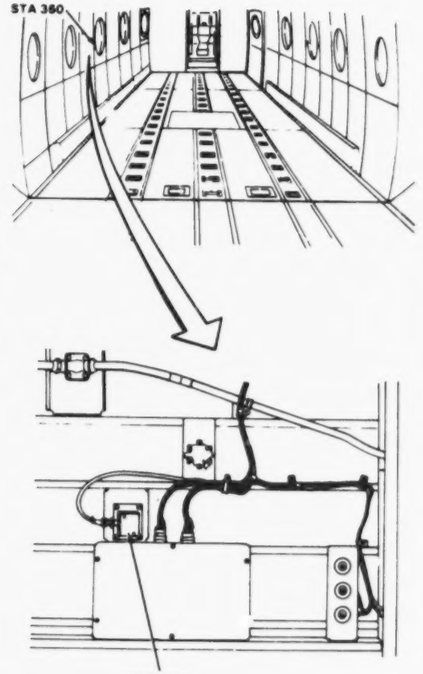
TASK	RESULT
33. **Set LEFT SIDE FWD AUX FUEL PUMP switch (26) to ON.** Have helper standby left side fwd aux tank and listen for operation of boost pump.	AUX PRESS light (17) will go out. If not, go to task 10-2.27. Fuel will transfer from LEFT SIDE FWD AUX TANK to LEFT SIDE MAIN TANK. AUX PRESS light (17) will come on when LEFT SIDE FWD AUX tank is depleted. The fuel pump will shut off automatically. If fuel pump continues running after AUX PRESS light comes on and tank is empty, replace left side thermistor control box.
34. **Set LEFT SIDE AFT AUX FUEL PUMP switch (25) to ON.** Have helper standby left side aft aux tank and listen for operation of boost pump.	Fuel will transfer from LEFT SIDE AFT AUX tank to LEFT SIDE MAIN tank. AUX PRESS light (17) will come on when LEFT SIDE AFT AUX tank is depleted. The fuel pump will shut off automatically. If fuel pump continues running after AUX PRESS light comes on and tank is empty, replace left side thermistor control box.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off



FUEL CONTROL PANEL


COCKPIT



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END OF TASK

10-2.4 LH FUEL PUMPS MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

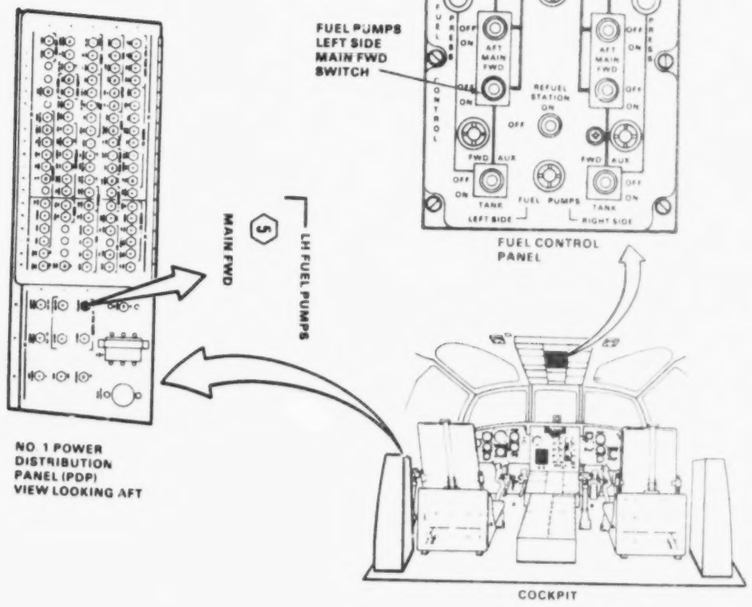
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

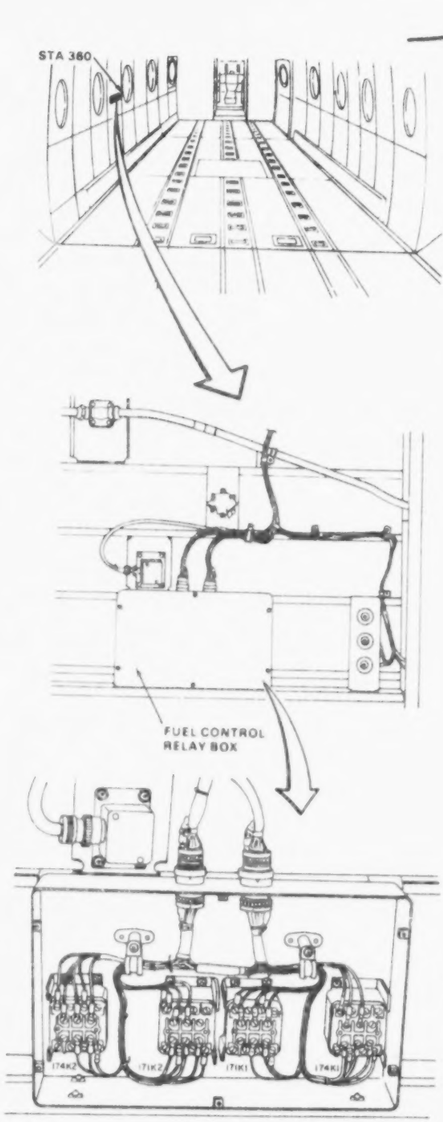
Materials:
None

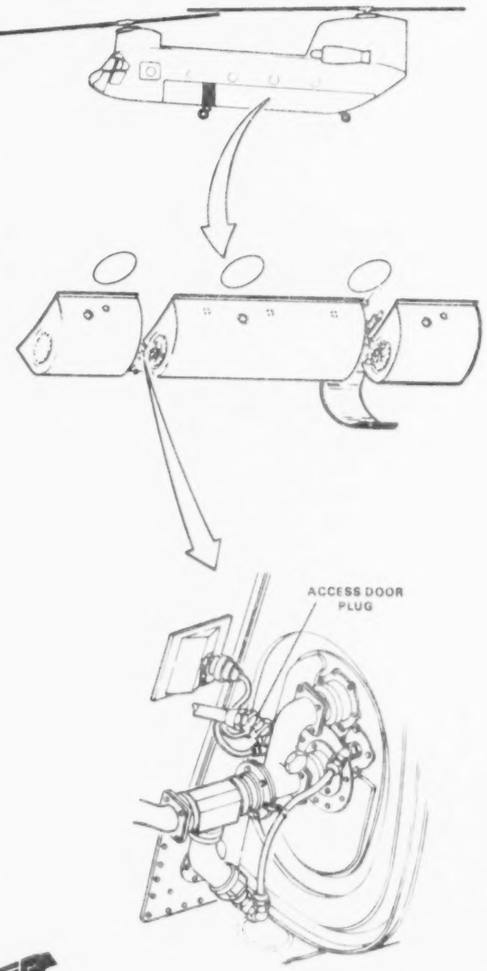
Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Fwd Landing Gear Access Panel Open







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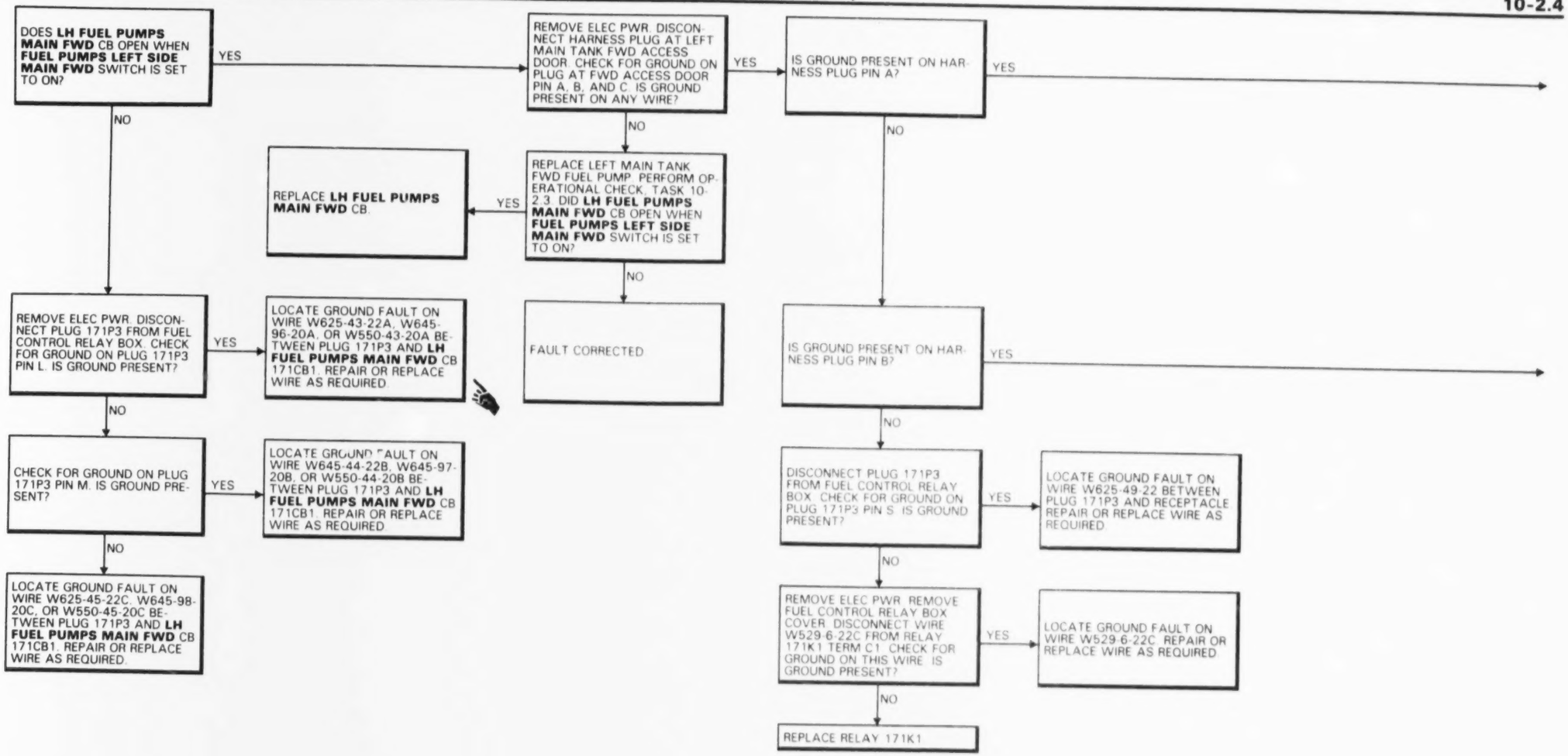
10-2.4 LH FUEL PUMPS MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **LH FUEL PUMPS MAIN FWD** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN FWD** SWITCH IS SET TO ON?
YES
NO
REMOVE ELEC PWR. DISCONNECT HARNESS PLUG AT LEFT MAIN TANK FWD ACCESS DOOR. CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PIN A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE LEFT MAIN TANK FWD FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **LH FUEL PUMPS MAIN FWD** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN FWD** SWITCH IS SET TO ON?
YES
REPLACE **LH FUEL PUMPS MAIN FWD** CB.
NO
FAULT CORRECTED
REMOVE ELEC PWR. DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN L. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-43-22A, W645-96-20A, OR W550-43-20A BETWEEN PLUG 171P3 AND **LH FUEL PUMPS MAIN FWD** CB 171CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 171P3 PIN M. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-44-22B, W645-97-20B, OR W550-44-20B BETWEEN PLUG 171P3 AND **LH FUEL PUMPS MAIN FWD** CB 171CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W625-45-22C, W645-98-20C, OR W550-45-20C BETWEEN PLUG 171P3 AND **LH FUEL PUMPS MAIN FWD** CB 171CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN S. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-49-22 BETWEEN PLUG 171P3 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-6-22C FROM RELAY 171K1 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-6-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K1

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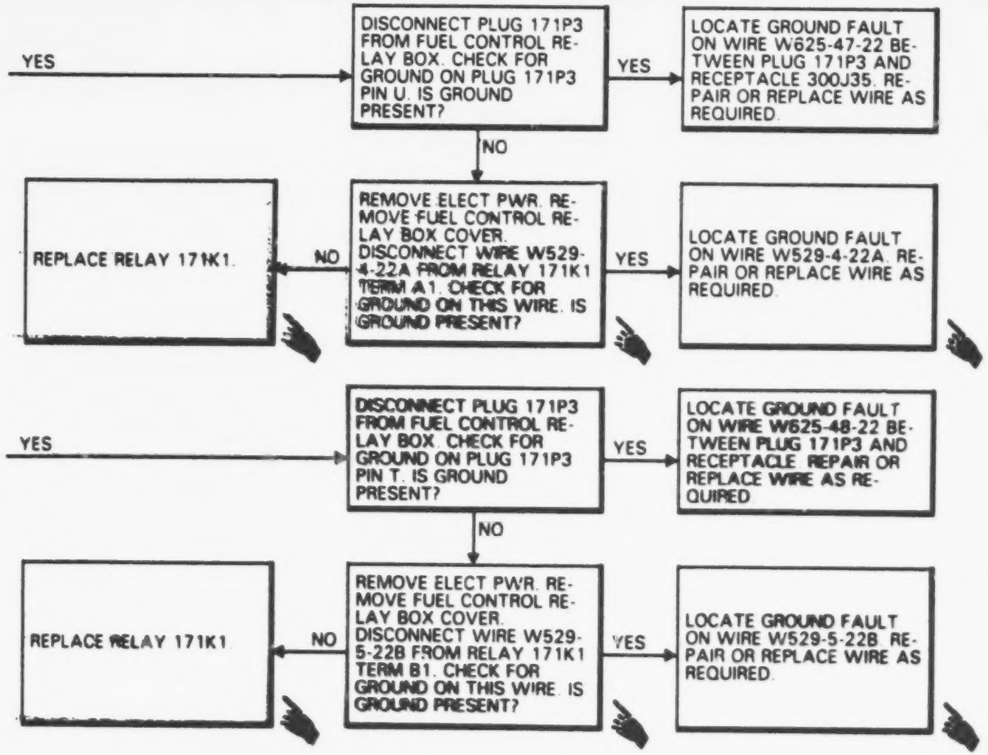
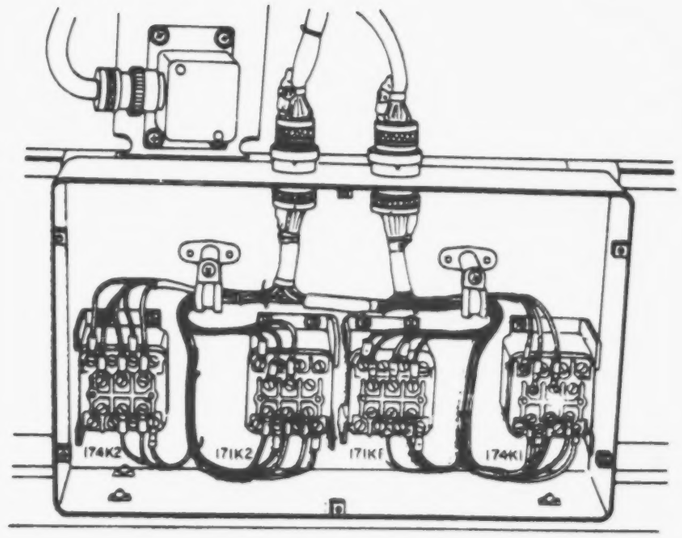
10-2.4 LH FUEL PUMPS MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


YES
DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN U. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-47-22 BETWEEN PLUG 171P3 AND RECEPTACLE 300J35. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K1.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-4-22A FROM RELAY 171K1 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-4-22A. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN T. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-48-22 BETWEEN PLUG 171P3 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE RELAY 171K1
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-5-22B FROM RELAY 171K1 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-5-22B. REPAIR OR REPLACE WIRE AS REQUIRED.



9876

END OF TASK

10-2.5 LH FUEL PUMPS MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

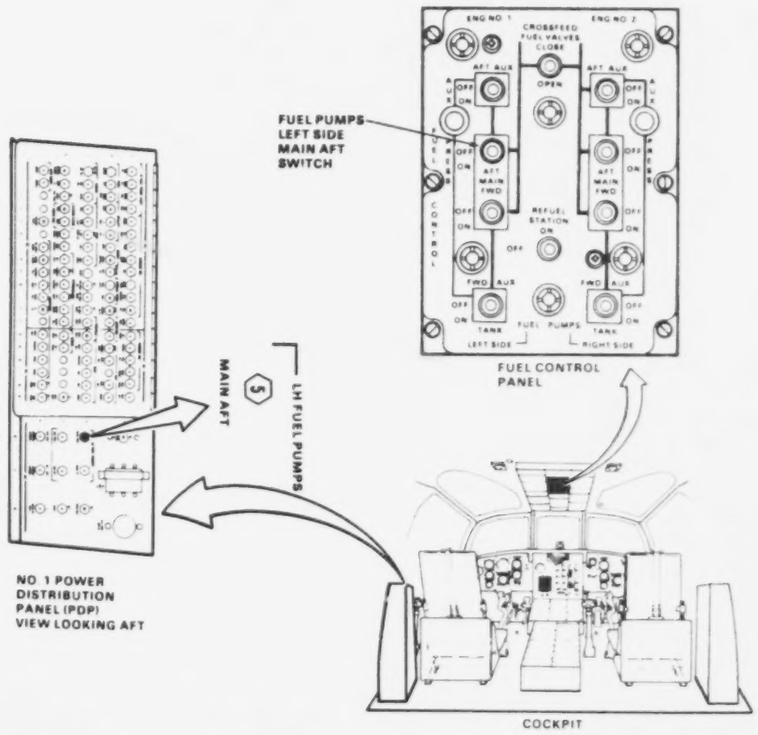
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

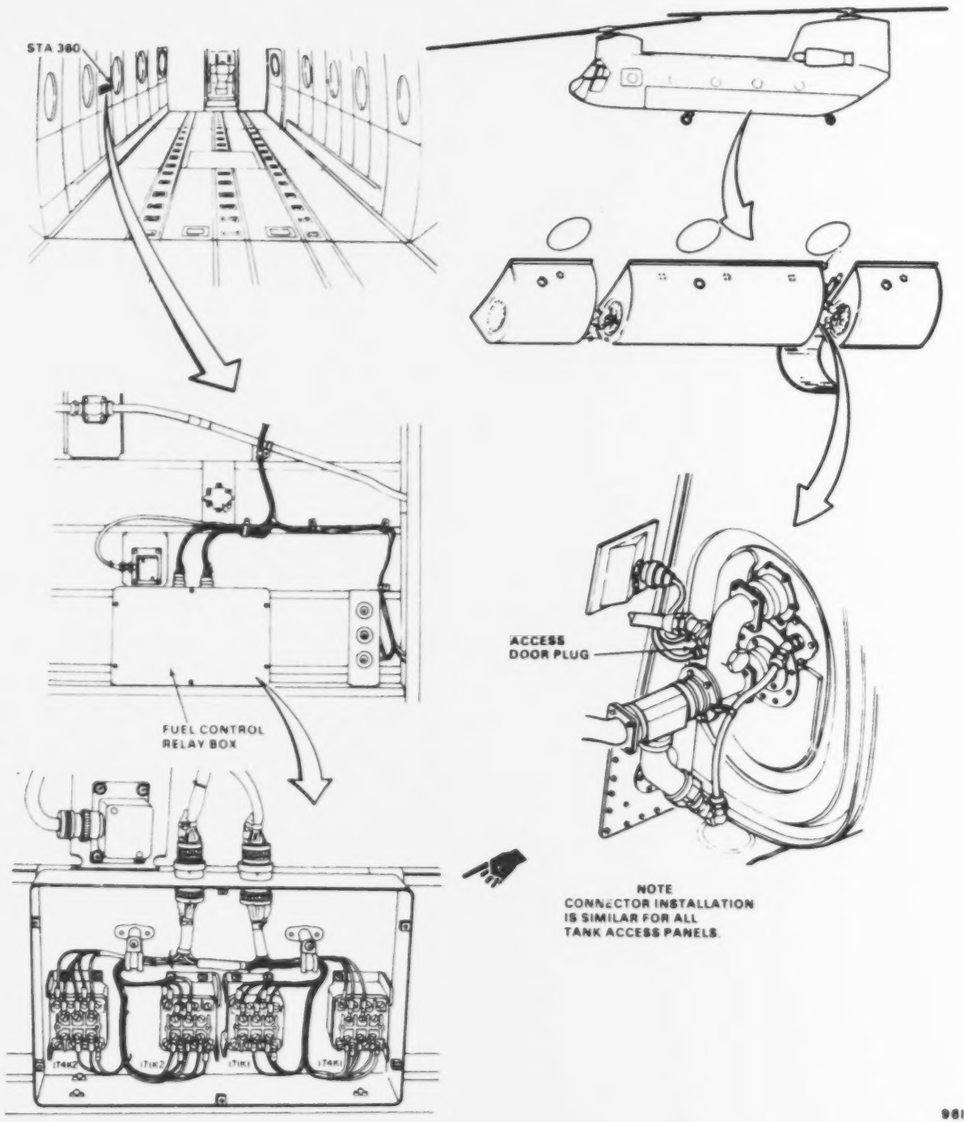
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Aft Intertank Access Panel Open





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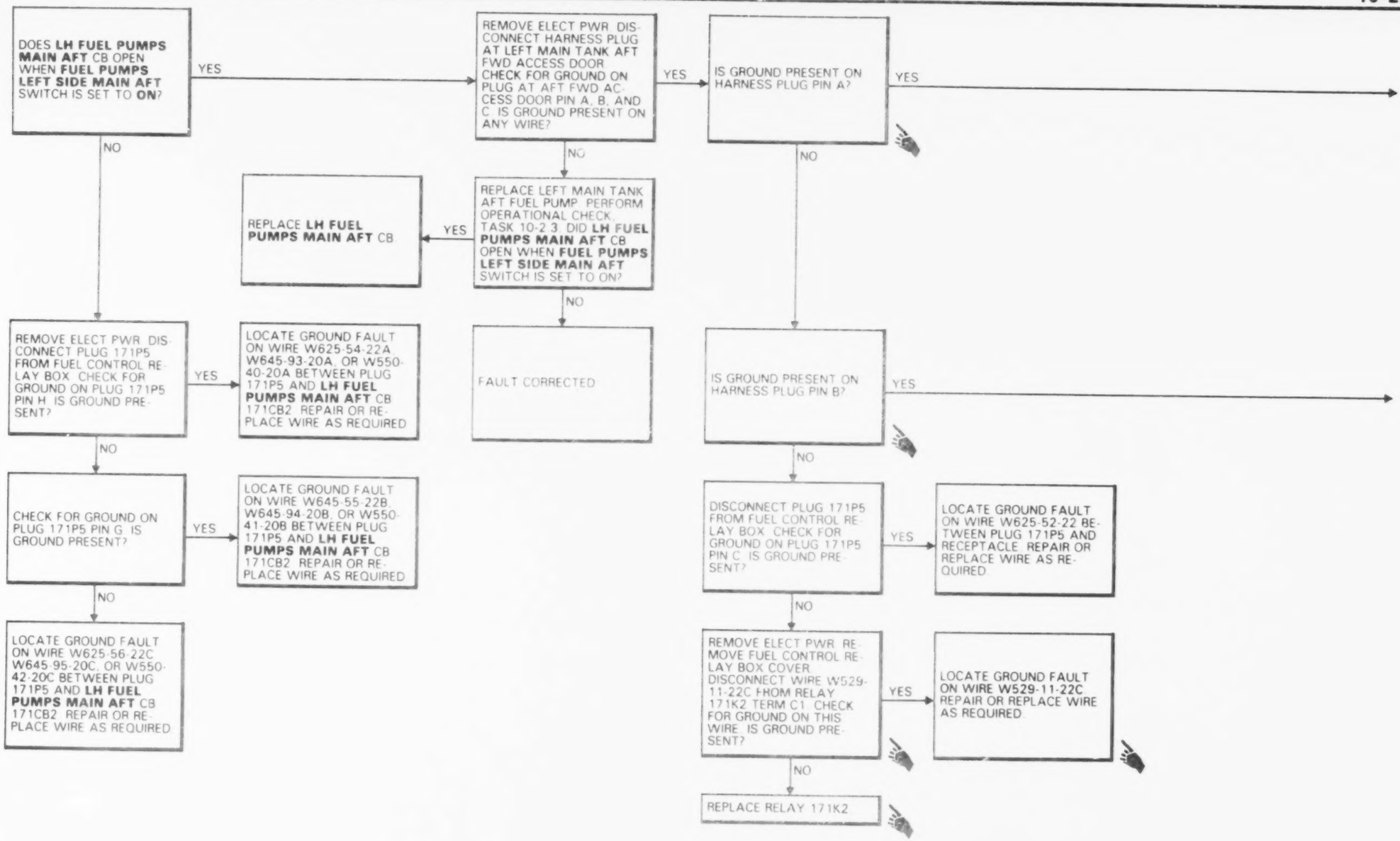
10-2.5 LH FUEL PUMPS MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **LH FUEL PUMPS MAIN AFT** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN AFT** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELECT PWR, DISCONNECT HARNESS PLUG AT LEFT MAIN TANK AFT FWD ACCESS DOOR. CHECK FOR GROUND ON PLUG AT AFT FWD ACCESS DOOR PIN A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE LEFT MAIN TANK AFT FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **LH FUEL PUMPS MAIN AFT** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN AFT** SWITCH IS SET TO ON?
YES
REPLACE **LH FUEL PUMPS MAIN AFT** CB.
NO
FAULT CORRECTED
REMOVE ELECT PWR, DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN H. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-54-22A, W645-93-20A, OR W550-40-20A BETWEEN PLUG 171P5 AND **LH FUEL PUMPS MAIN AFT** CB 171CB2. REPAIR OR REPLACE WIRE AS REQUIRED
NO
CHECK FOR GROUND ON PLUG 171P5 PIN G. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-55-22B, W645-94-20B, OR W550-41-20B BETWEEN PLUG 171P5 AND **LH FUEL PUMPS MAIN AFT** CB 171CB2. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE GROUND FAULT ON WIRE W625-56-22C, W645-95-20C, OR W550-42-20C BETWEEN PLUG 171P5 AND **LH FUEL PUMPS MAIN AFT** CB 171CB2. REPAIR OR REPLACE WIRE AS REQUIRED
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN C. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-52-22 BETWEEN PLUG 171P5 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-11-22C FROM RELAY 171K2 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-11-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K2.

GO TO NEXT PAGE

10-2.5 LH FUEL PUMPS MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

YES → DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN A. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W625-50-22 BETWEEN PLUG 171P5 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-13-22A FROM RELAY 171K2 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W529-13-22A. REPAIR OR REPLACE WIRE AS REQUIRED

NO → REPLACE RELAY 171K2

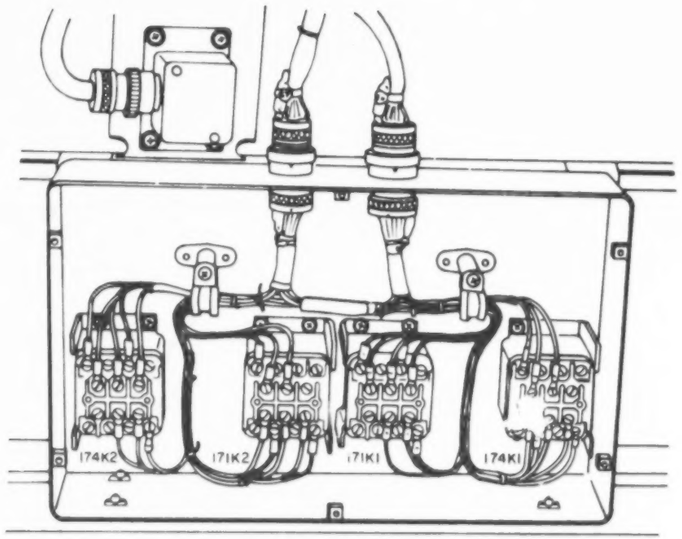
YES → DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN B. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W625-51-22 BETWEEN PLUG 171P5 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED

NO → REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-12-22B FHOM RELAY 171K2 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W529-12-22B. REPAIR OR REPLACE WIRE AS REQUIRED

NO → REPLACE RELAY 171K2



9677

END OF TASK

10-2.6 LH FUEL PUMPS AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

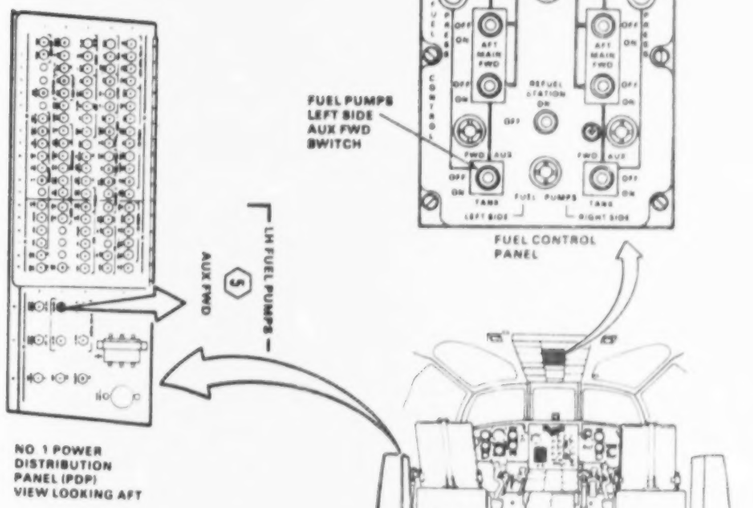
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

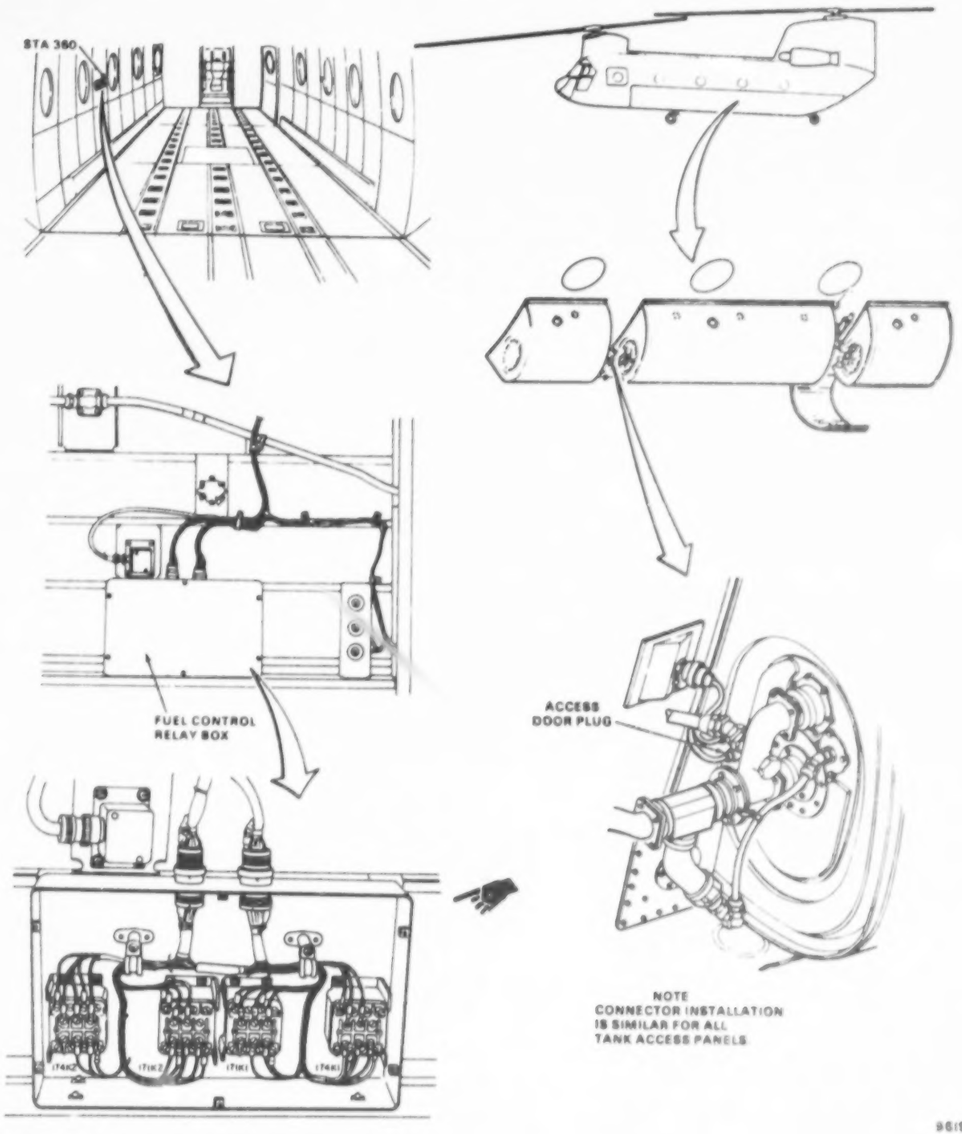
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Forward Landing Gear Access Panel Open





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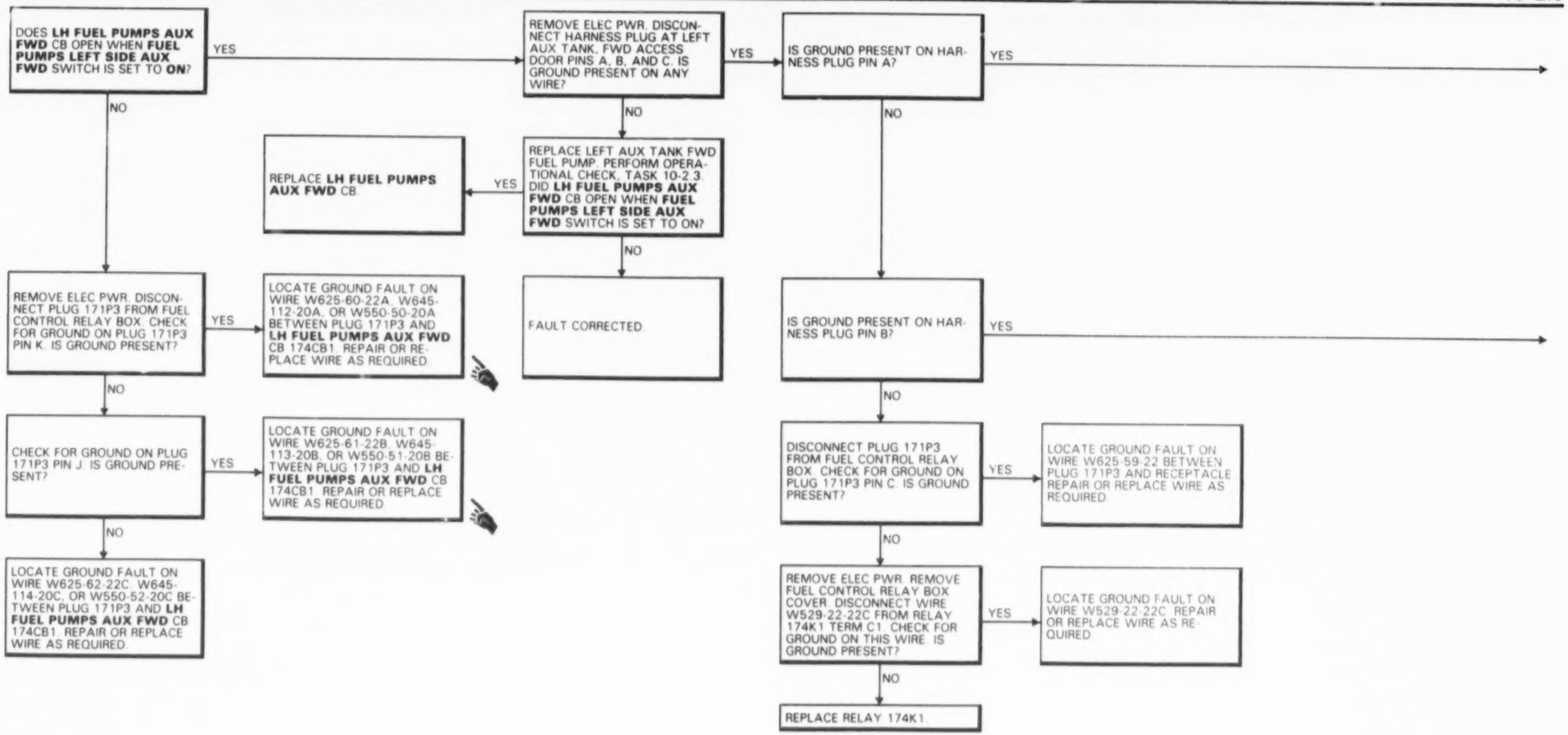
10-2.6 LH FUEL PUMPS AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **LH FUEL PUMPS AUX FWD** CB OPEN WHEN **FUEL PUMPS LEFT SIDE AUX FWD** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELEC PWR. DISCONNECT HARNESS PLUG AT LEFT AUX TANK, FWD ACCESS DOOR PINS A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
REPLACE LEFT AUX TANK FWD FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **LH FUEL PUMPS AUX FWD** CB OPEN WHEN **FUEL PUMPS LEFT SIDE AUX FWD** SWITCH IS SET TO ON?
YES
REPLACE **LH FUEL PUMPS AUX FWD** CB.
NO
FAULT CORRECTED.
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REMOVE ELEC PWR. DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN K. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-60-22A, W645-112-20A, OR W550-50-20A BETWEEN PLUG 171P3 AND **LH FUEL PUMPS AUX FWD** CB 174CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 171P3 PIN J. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-61-22B, W645-113-20B, OR W550-51-20B BETWEEN PLUG 171P3 AND **LH FUEL PUMPS AUX FWD** CB 174CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W625-62-22C, W645-114-20C, OR W550-52-20C BETWEEN PLUG 171P3 AND **LH FUEL PUMPS AUX FWD** CB 174CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN C. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-59-22 BETWEEN PLUG 171P3 AND RECEPTACLE REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-22-22C FROM RELAY 174K1 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-22-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K1.

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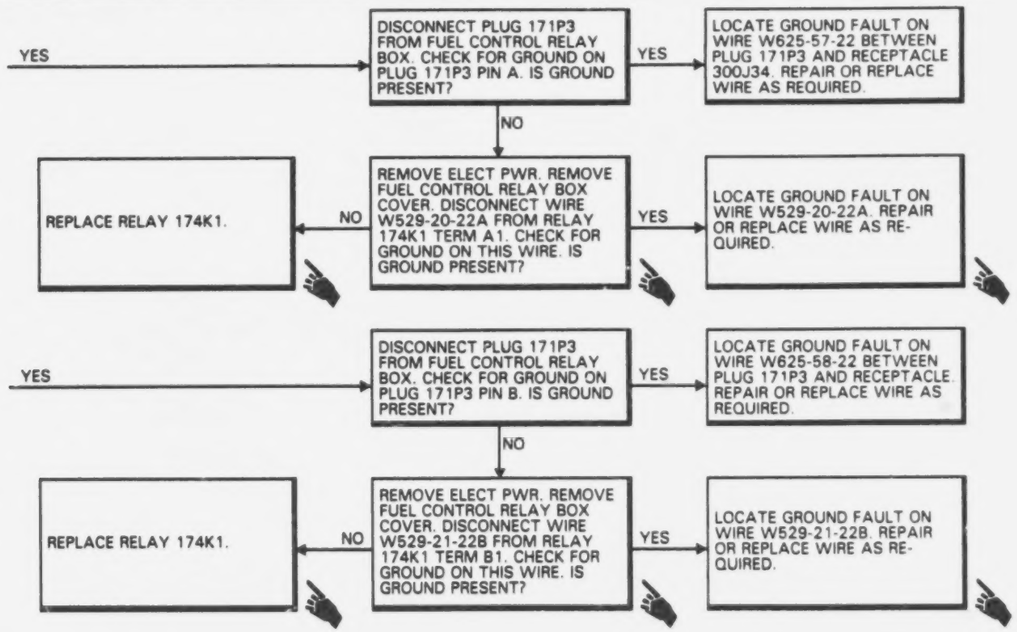
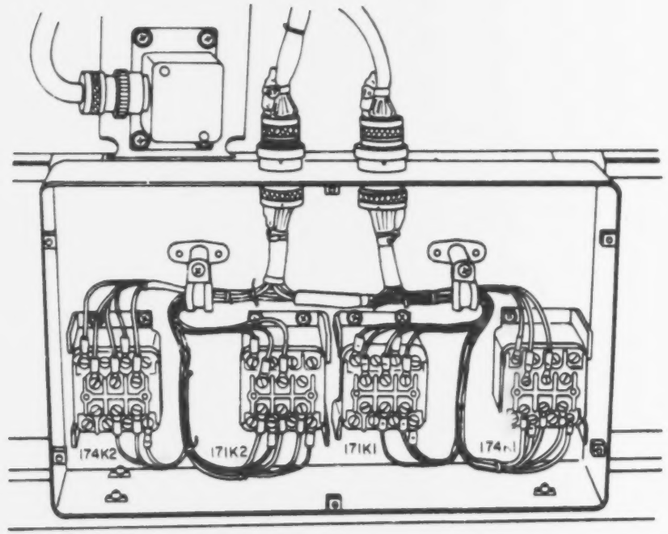
10-2.6 LH FUEL PUMPS AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


YES
DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-57-22 BETWEEN PLUG 171P3 AND RECEPTACLE 300J34. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K1.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-20-22A FROM RELAY 174K1 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-20-22A. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-58-22 BETWEEN PLUG 171P3 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K1.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-21-22B FROM RELAY 174K1 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-21-22B. REPAIR OR REPLACE WIRE AS REQUIRED.



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END OF TASK

10-2.7 LH FUEL PUMPS AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

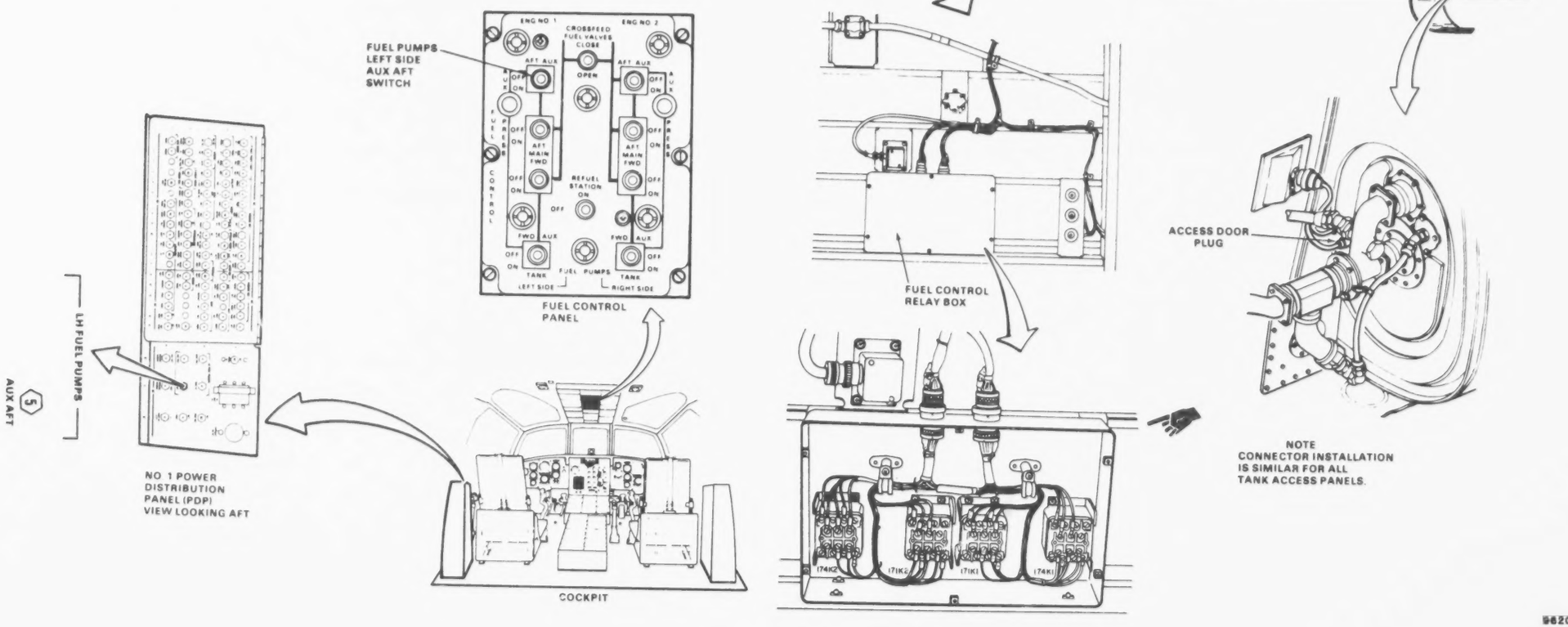
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Aft Intertank Access Panel Open



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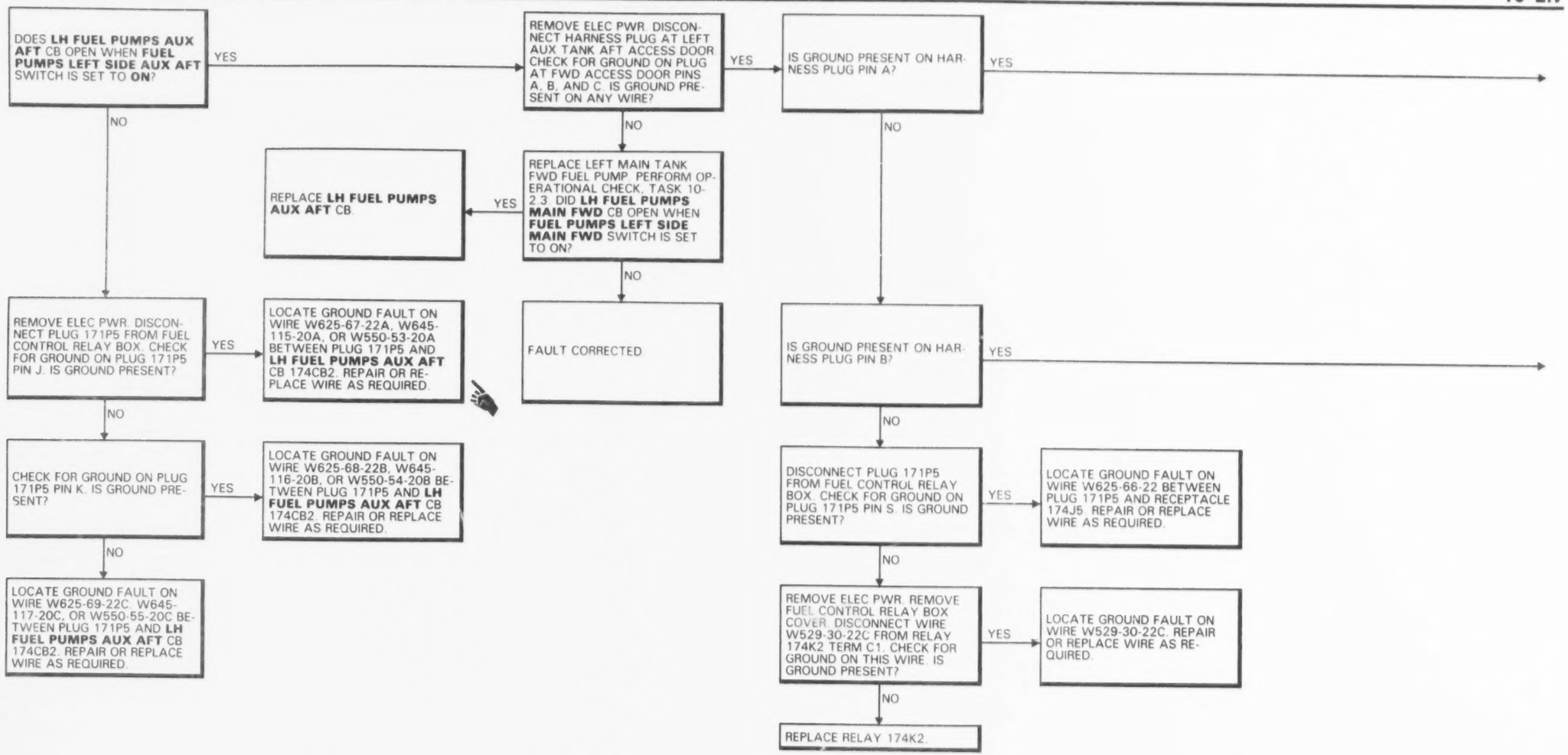
10-2.7 LH FUEL PUMPS AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **LH FUEL PUMPS AUX AFT** CB OPEN WHEN **FUEL PUMPS LEFT SIDE AUX AFT** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELEC PWR. DISCONNECT HARNESS PLUG AT LEFT AUX TANK AFT ACCESS DOOR CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PINS A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE LEFT MAIN TANK FWD FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **LH FUEL PUMPS MAIN FWD** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN FWD** SWITCH IS SET TO ON?
YES
REPLACE **LH FUEL PUMPS AUX AFT** CB.
NO
FAULT CORRECTED
REMOVE ELEC PWR. DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN J. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-67-22A, W645-115-20A, OR W550-53-20A BETWEEN PLUG 171P5 AND **LH FUEL PUMPS AUX AFT** CB 174CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 171P5 PIN K. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-68-22B, W645-116-20B, OR W550-54-20B BETWEEN PLUG 171P5 AND **LH FUEL PUMPS AUX AFT** CB 174CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W625-69-22C, W645-117-20C, OR W550-55-20C BETWEEN PLUG 171P5 AND **LH FUEL PUMPS AUX AFT** CB 174CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN S. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-66-22 BETWEEN PLUG 171P5 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-30-22C FROM RELAY 174K2 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-30-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K2.

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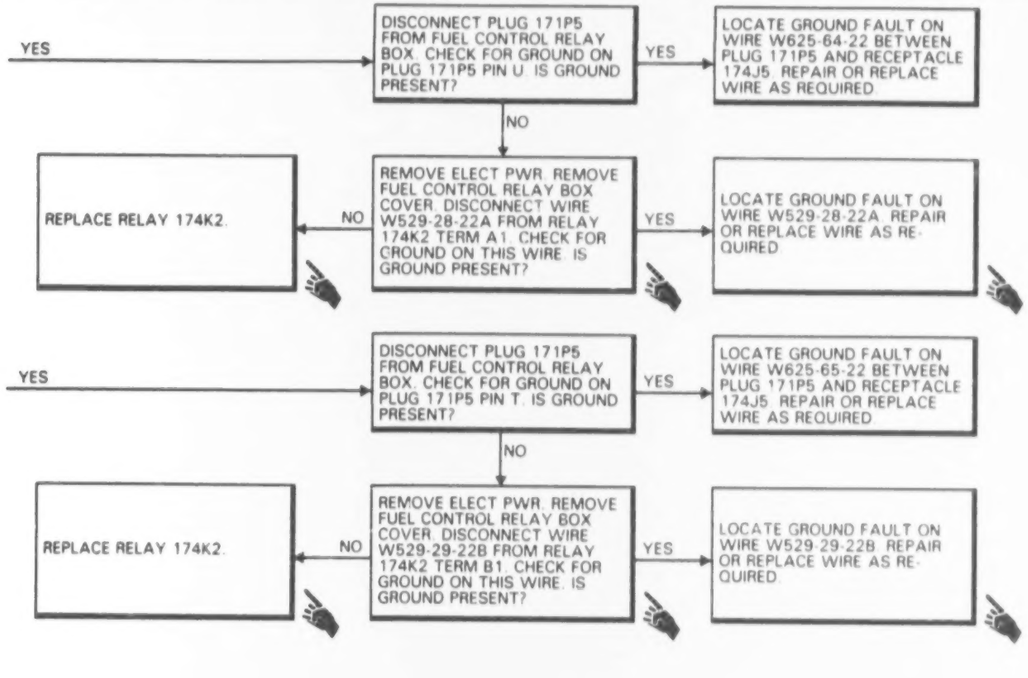
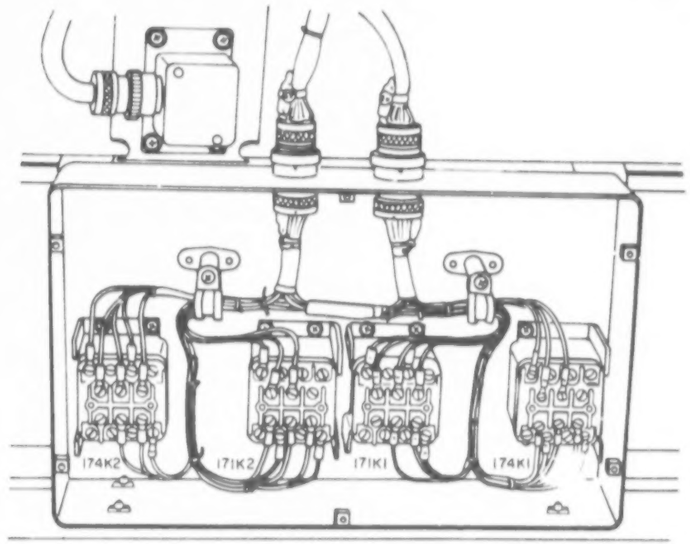
10-2.7 LH FUEL PUMPS AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


YES
DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN U. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-64-22 BETWEEN PLUG 171P5 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE RELAY 174K2.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-28-22A FROM RELAY 174K2 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-28-22A. REPAIR OR REPLACE WIRE AS REQUIRED
YES
DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN T. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-65-22 BETWEEN PLUG 171P5 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE RELAY 174K2.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-29-22B FROM RELAY 174K2 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-29-22B. REPAIR OR REPLACE WIRE AS REQUIRED.



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END OF TASK

10-2.8 LH FUEL PUMP CONT AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

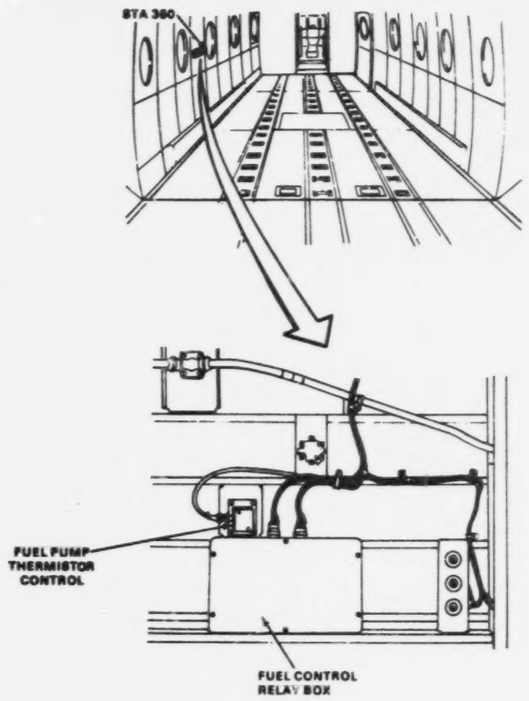
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

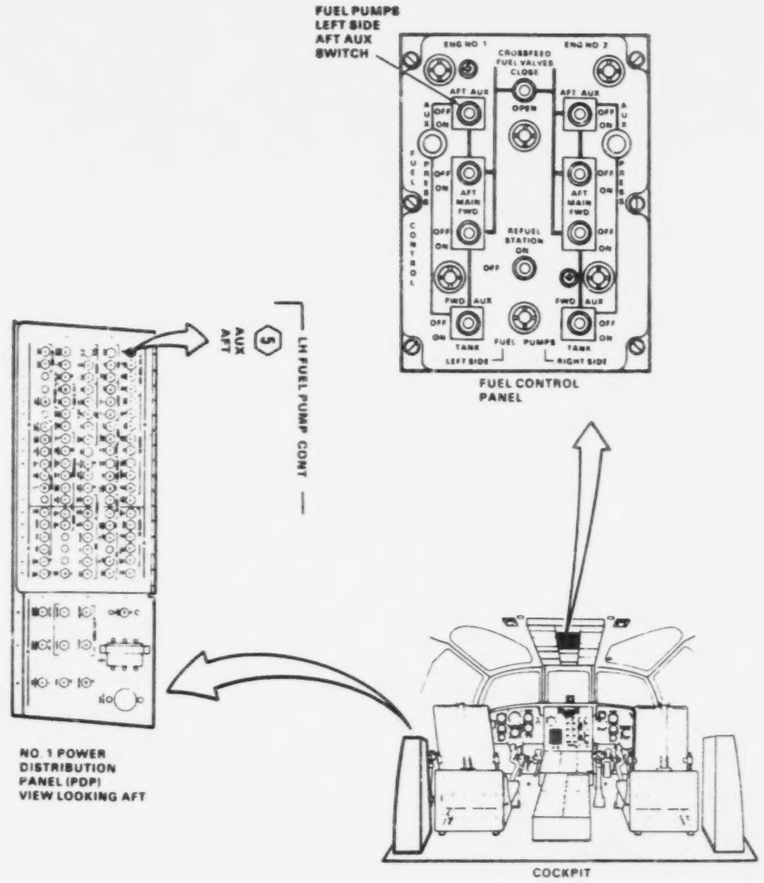
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360



90 X 84


FUEL PUMPS LEFT SIDE AFT AUX SWITCH
FUEL CONTROL PANEL
LH FUEL PUMP CONT AUX AFT
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT
COCKPIT

D145-11735-SPA

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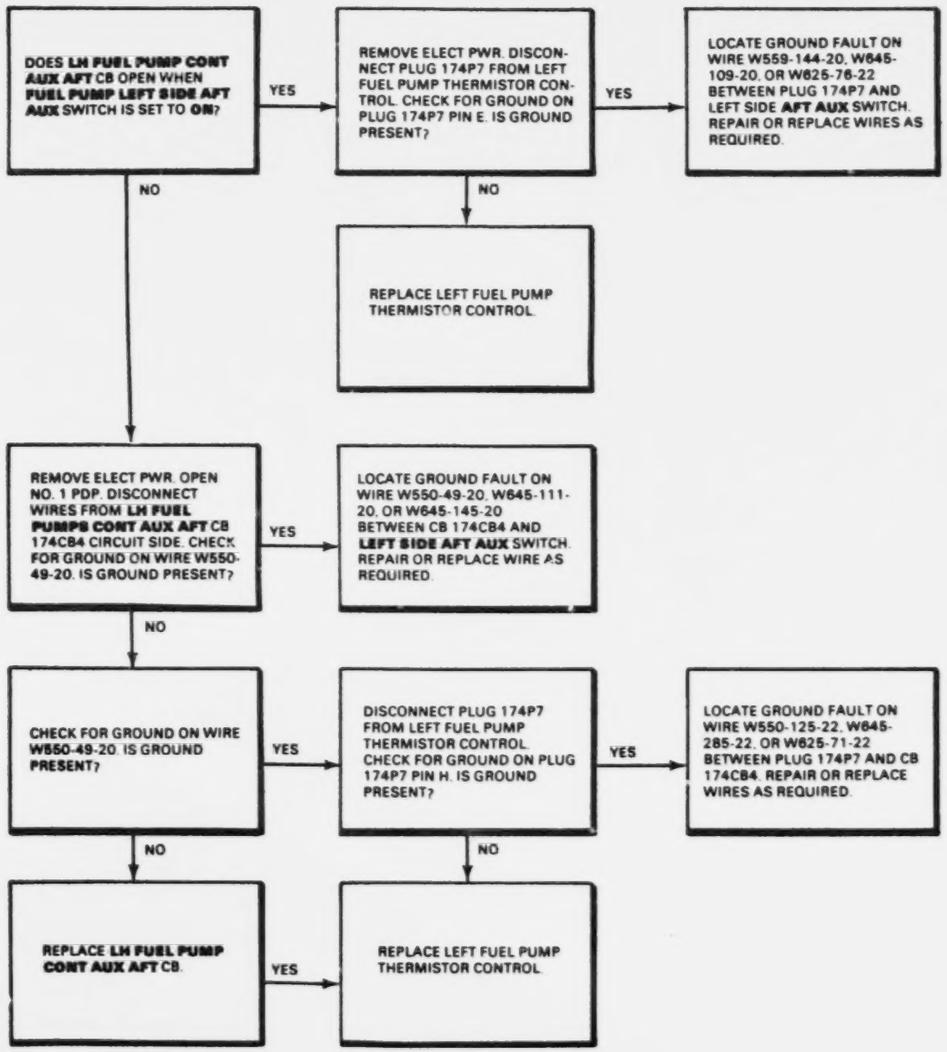
10-2.8 LH FUEL PUMP CONT AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES LH FUEL PUMP CONT AUX AFT CB OPEN WHEN FUEL PUMP LEFT SIDE AFT AUX SWITCH IS SET TO ON?
YES
REMOVE ELECT PWR. DISCONNECT PLUG 174P7 FROM LEFT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P7 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-144-20, W645-109-20, OR W625-76-22 BETWEEN PLUG 174P7 AND LEFT SIDE AFT AUX SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
NO
REPLACE LEFT FUEL PUMP THERMISTOR CONTROL.
REMOVE ELECT PWR. OPEN NO. 1 PDP. DISCONNECT WIRES FROM LH FUEL PUMPS CONT AUX AFT CB 174CB4 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W550-49-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-49-20, W645-111-20, OR W645-145-20 BETWEEN CB 174CB4 AND LEFT SIDE AFT AUX SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON WIRE W550-49-20. IS GROUND PRESENT?
YES
DISCONNECT PLUG 174P7 FROM LEFT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P7 PIN H. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-125-22, W645-285-22, OR W625-71-22 BETWEEN PLUG 174P7 AND CB 174CB4. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
NO
REPLACE LH FUEL PUMP CONT AUX AFT CB.
YES
REPLACE LEFT FUEL PUMP THERMISTOR CONTROL.

END OF TASK

10-2.9 LH FUEL PUMP CONT MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED 10-2.9

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

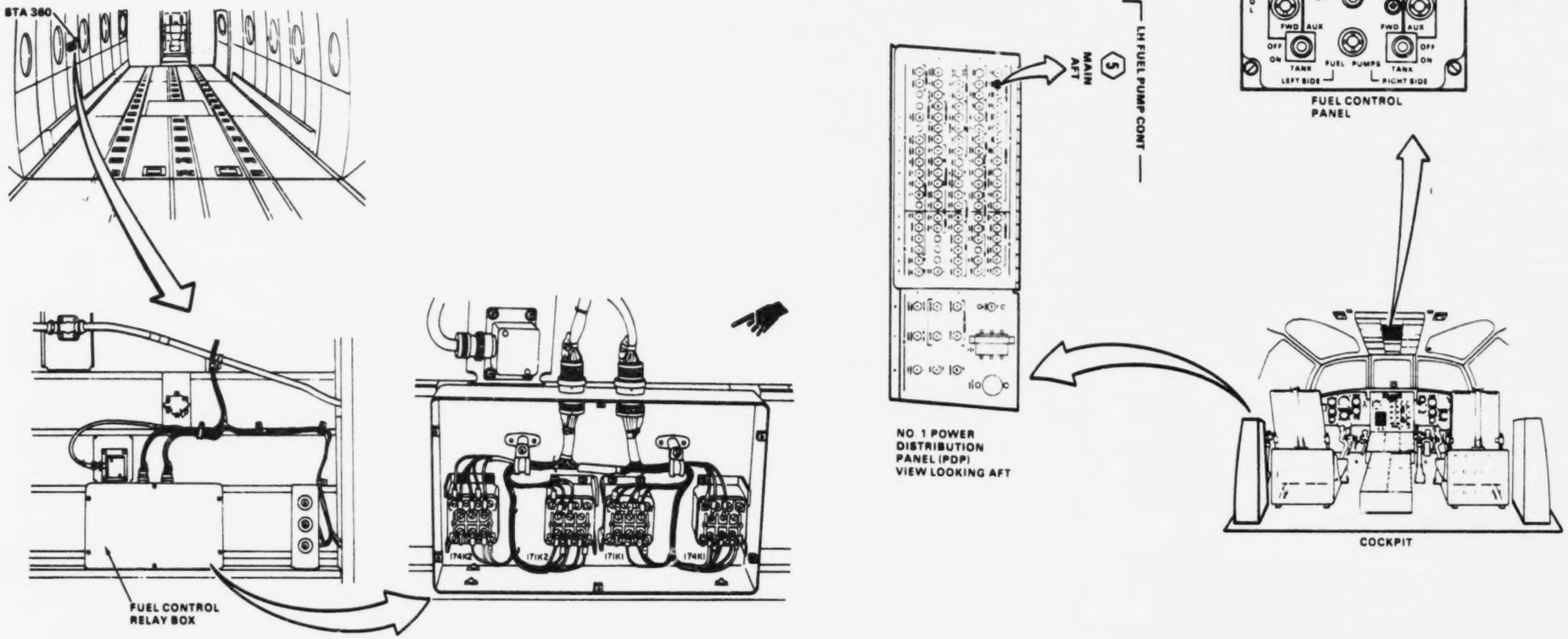
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360



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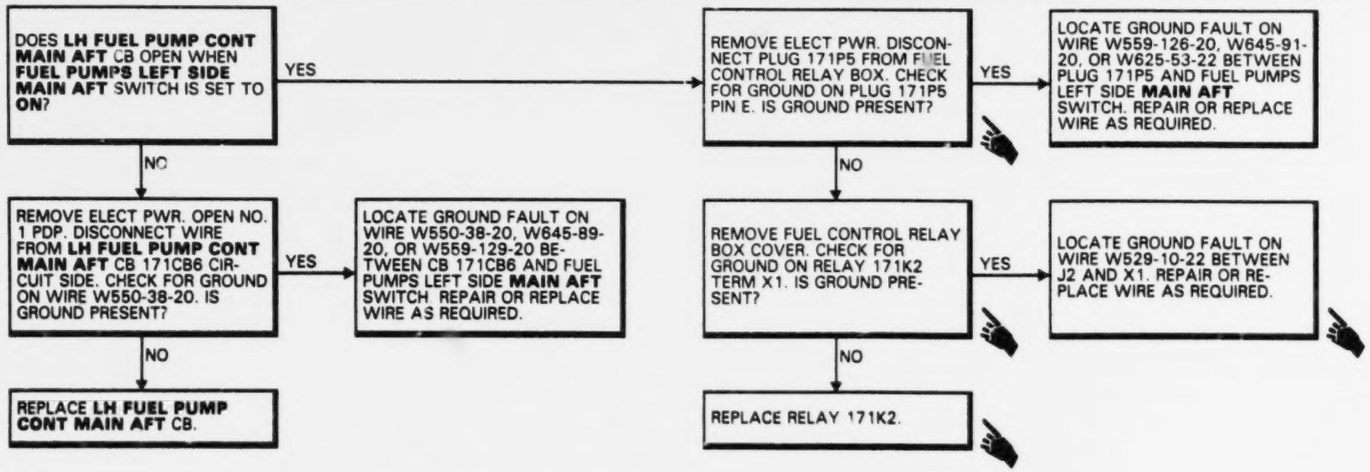
10-2.9 LH FUEL PUMP CONT MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **LH FUEL PUMP CONT MAIN AFT** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN AFT** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELECT PWR. OPEN NO. 1 PDP. DISCONNECT WIRE FROM **LH FUEL PUMP CONT MAIN AFT** CB 171CB6 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W550-38-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-38-20, W645-89-20, OR W559-129-20 BETWEEN CB 171CB6 AND FUEL PUMPS LEFT SIDE **MAIN AFT** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE **LH FUEL PUMP CONT MAIN AFT** CB.
REMOVE ELECT PWR. DISCONNECT PLUG 171P5 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P5 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-126-20, W645-91-20, OR W625-53-22 BETWEEN PLUG 171P5 AND FUEL PUMPS LEFT SIDE **MAIN AFT** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE FUEL CONTROL RELAY BOX COVER. CHECK FOR GROUND ON RELAY 171K2 TERM X1. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-10-22 BETWEEN J2 AND X1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K2.

END OF TASK

10-2.10 LH FUEL PUMP CONT MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED 10-2.10

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

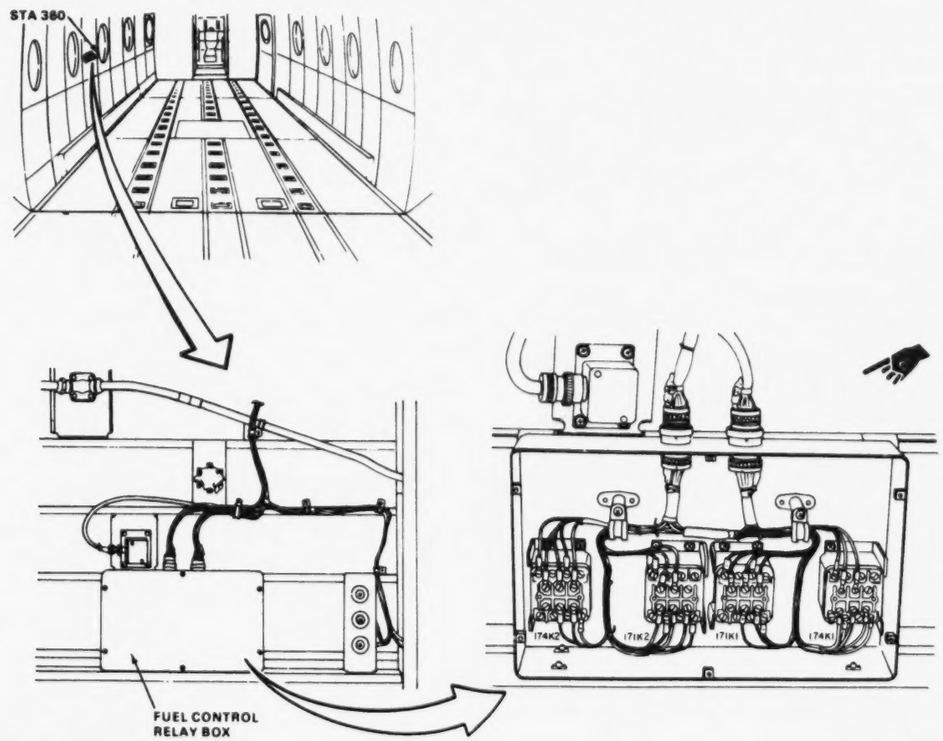
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

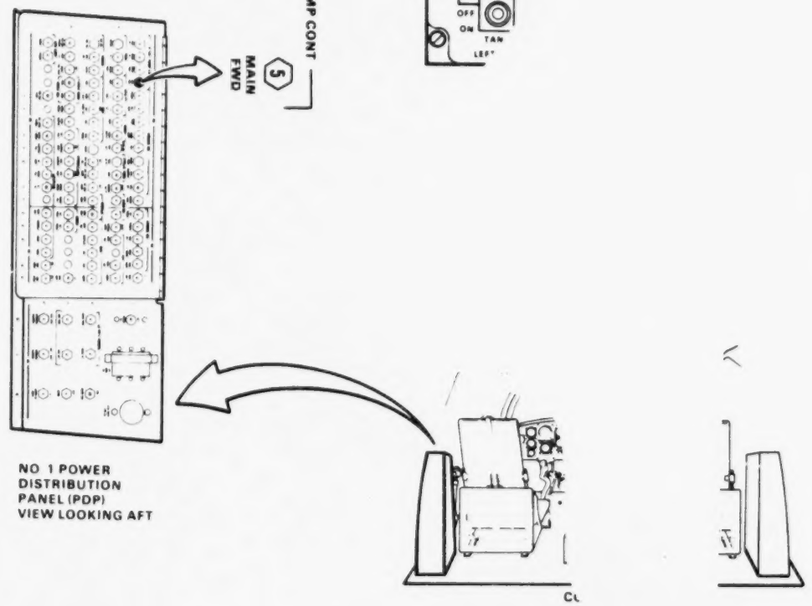
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360





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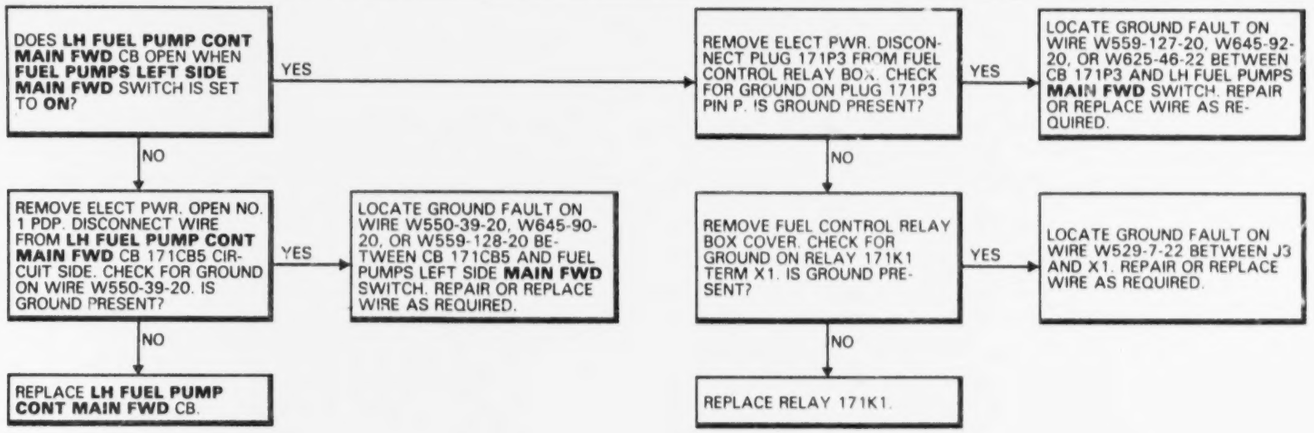
10-2.10 LH FUEL PUMP CONT MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **LH FUEL PUMP CONT MAIN FWD** CB OPEN WHEN **FUEL PUMPS LEFT SIDE MAIN FWD** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELECT PWR. OPEN NO. 1 PDP. DISCONNECT WIRE FROM **LH FUEL PUMP CONT MAIN FWD** CB 171CB5 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W550-39-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-39-20, W645-90-20, OR W559-128-20 BETWEEN CB 171CB5 AND FUEL PUMPS LEFT SIDE **MAIN FWD** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE **LH FUEL PUMP CONT MAIN FWD** CB.
REMOVE ELECT PWR. DISCONNECT PLUG 171P3 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P3 PIN P. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-127-20, W645-92-20, OR W625-46-22 BETWEEN CB 171P3 AND LH FUEL PUMPS **MAIN FWD** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE FUEL CONTROL RELAY BOX COVER. CHECK FOR GROUND ON RELAY 171K1 TERM X1. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-7-22 BETWEEN J3 AND X1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K1.

END OF TASK

10-2.11 LH FUEL PUMP CONT AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

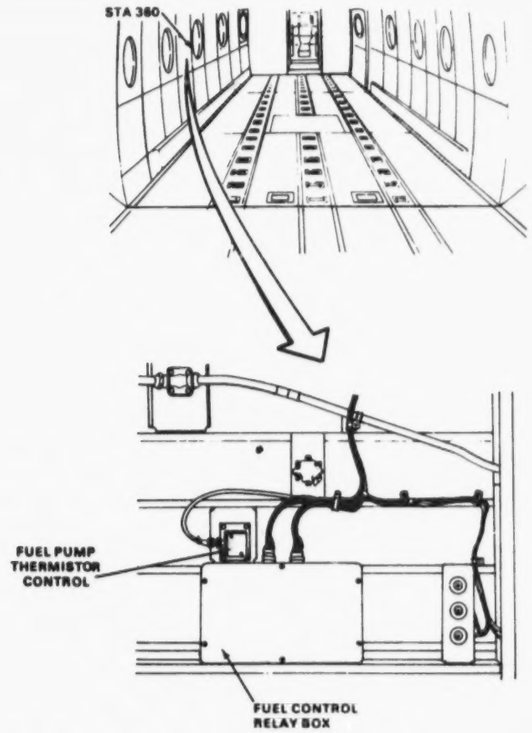
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

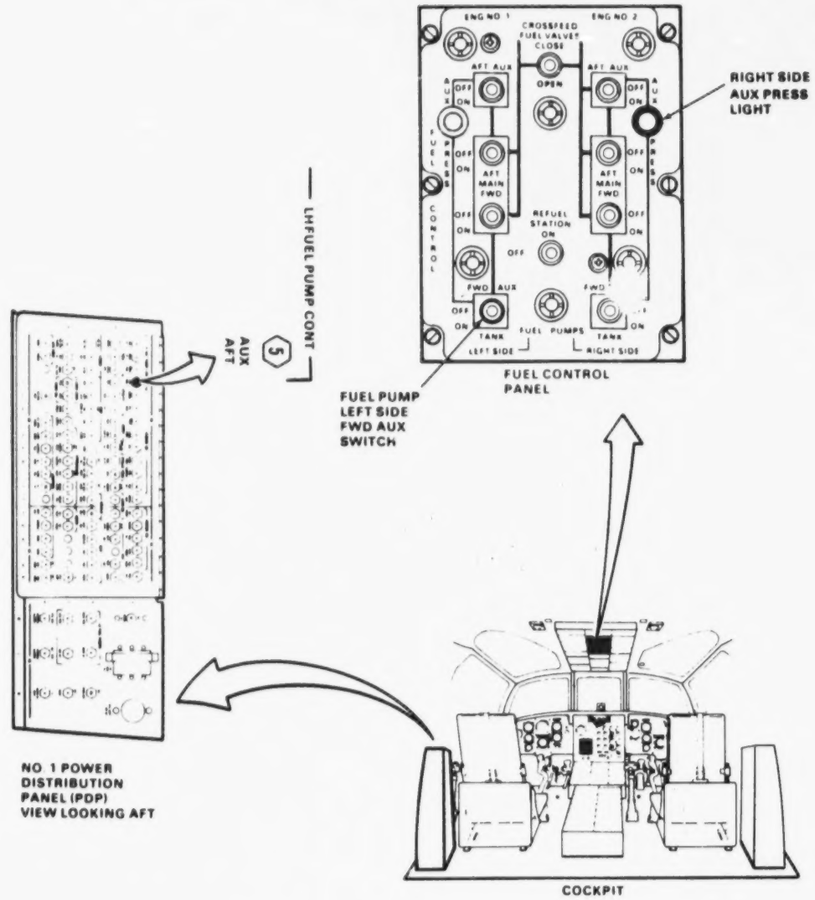
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360





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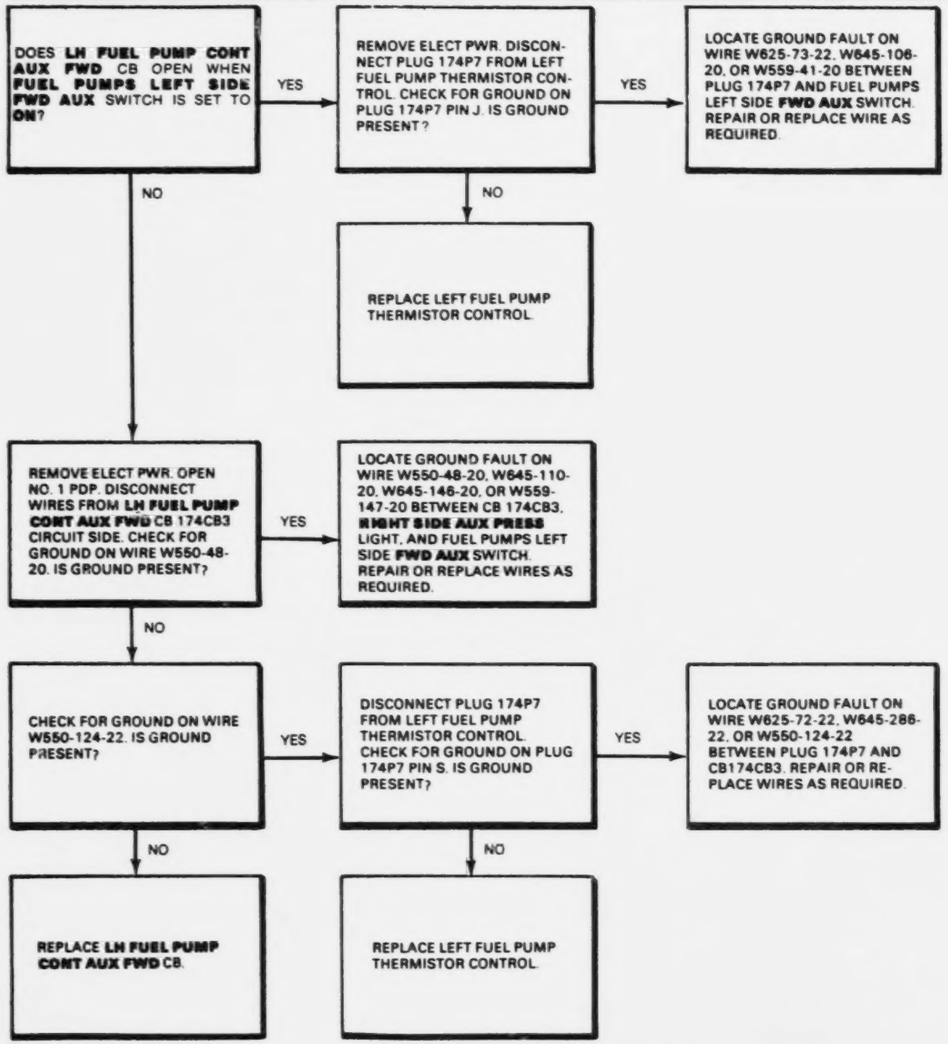
10-2.11 LH FUEL PUMP CONT AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES LH FUEL PUMP CONT AUX FWD CB OPEN WHEN FUEL PUMPS LEFT SIDE FWD AUX SWITCH IS SET TO ON?
YES
REMOVE ELECT PWR. DISCONNECT PLUG 174P7 FROM LEFT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P7 PIN J. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-73-22, W645-106-20, OR W559-41-20 BETWEEN PLUG 174P7 AND FUEL PUMPS LEFT SIDE FWD AUX SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
NO
REPLACE LEFT FUEL PUMP THERMISTOR CONTROL.
REMOVE ELECT PWR. OPEN NO. 1 PDP. DISCONNECT WIRES FROM LH FUEL PUMP CONT AUX FWD CB 174CB3 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W550-48-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-48-20, W645-110-20, W645-146-20, OR W559-147-20 BETWEEN CB 174CB3, RIGHT SIDE AUX PRESS LIGHT, AND FUEL PUMPS LEFT SIDE FWD AUX SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
CHECK FOR GROUND ON WIRE W550-124-22. IS GROUND PRESENT?
YES
DISCONNECT PLUG 174P7 FROM LEFT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P7 PIN S. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-72-22, W645-286-22, OR W550-124-22 BETWEEN PLUG 174P7 AND CB174CB3. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
NO
REPLACE LH FUEL PUMP CONT AUX FWD CB.
REPLACE LEFT FUEL PUMP THERMISTOR CONTROL.

END OF TASK

10-2.12 RH FUEL PUMP MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED 10-2.12

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

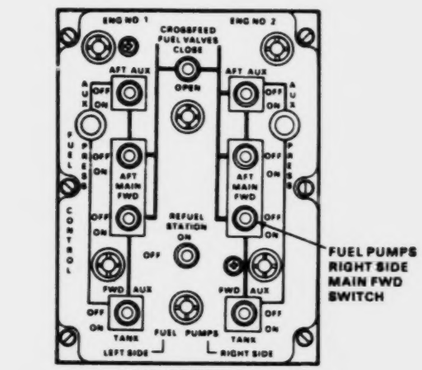
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

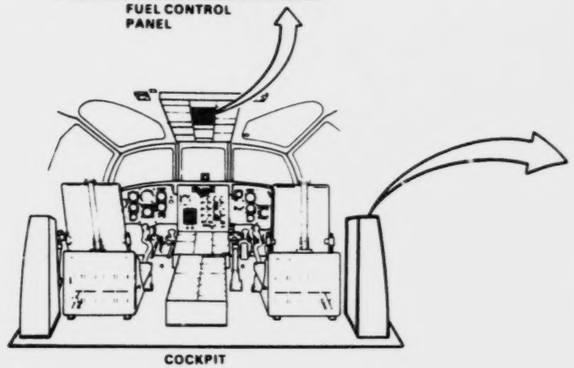
Materials:
None

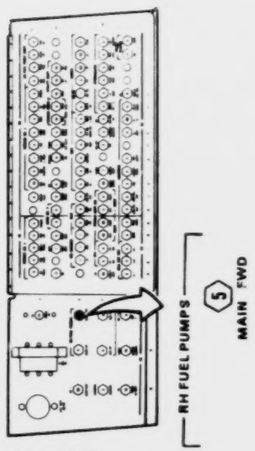
Personnel Required:
Aircraft Electrician (2)

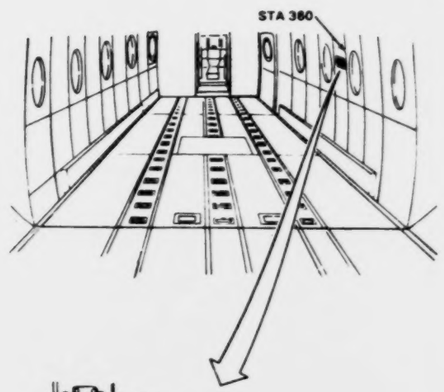
References:
TM 55-1520-240-23

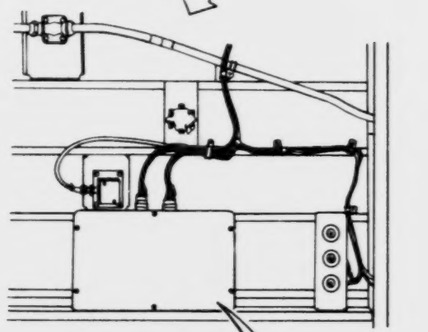
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Forward Landing Gear Access Panel Open

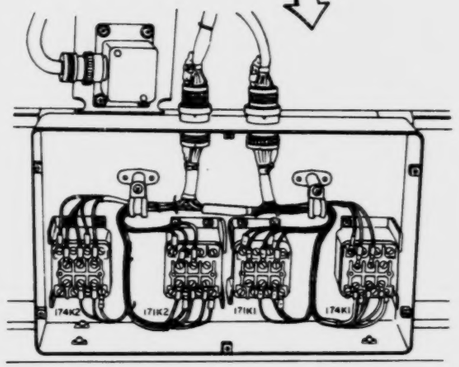


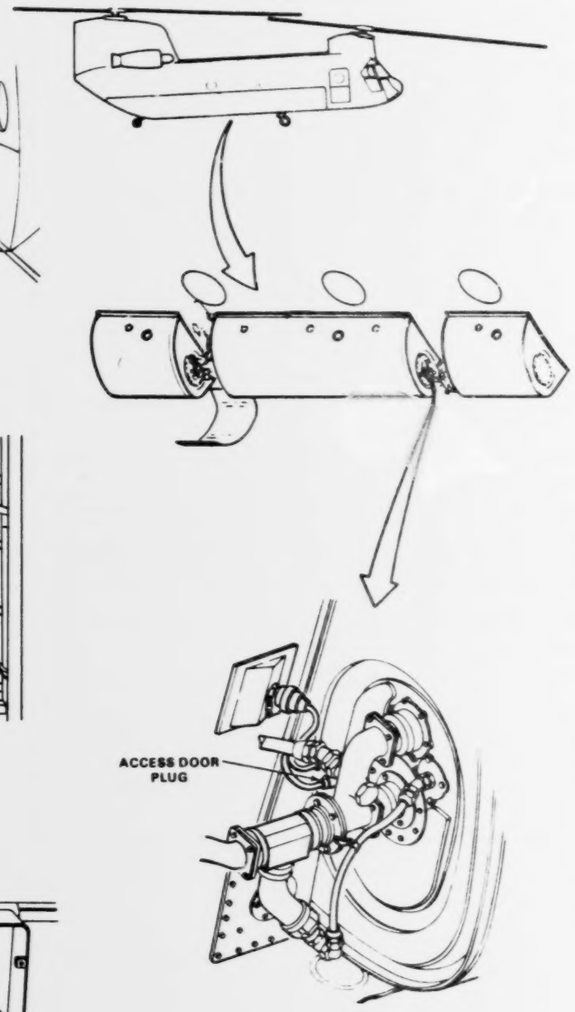












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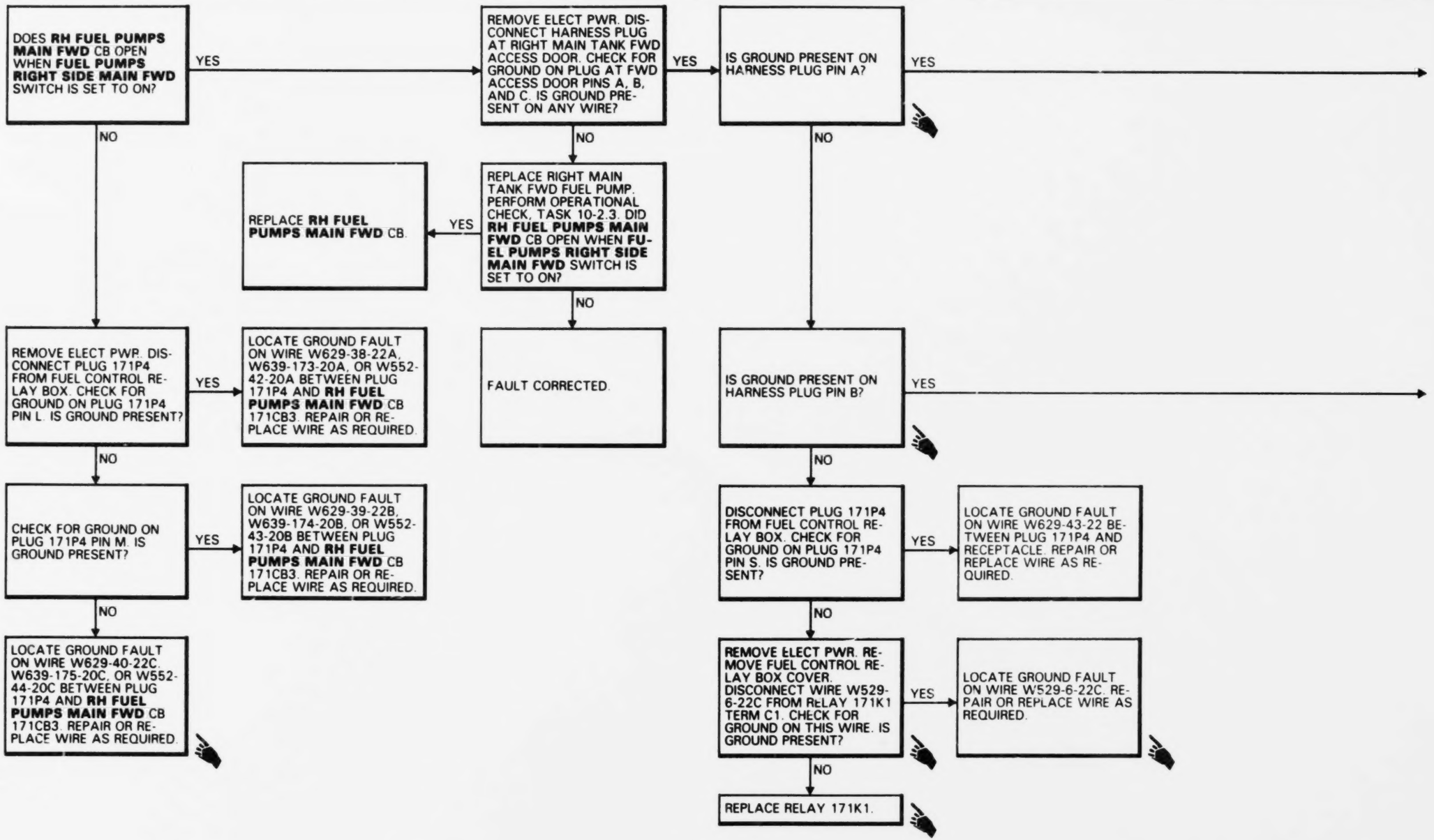
DOES **RH FUEL PUMPS MAIN FWD** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE MAIN FWD** SWITCH IS SET TO ON?
YES
NO
REMOVE ELECT PWR. DISCONNECT HARNESS PLUG AT RIGHT MAIN TANK FWD ACCESS DOOR. CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PINS A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE **RH FUEL PUMPS MAIN FWD** CB.
YES
REPLACE RIGHT MAIN TANK FWD FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **RH FUEL PUMPS MAIN FWD** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE MAIN FWD** SWITCH IS SET TO ON?
NO
FAULT CORRECTED.
REMOVE ELECT PWR. DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN L. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-38-22A, W639-173-20A, OR W552-42-20A BETWEEN PLUG 171P4 AND **RH FUEL PUMPS MAIN FWD** CB 171CB3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
CHECK FOR GROUND ON PLUG 171P4 PIN M. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-39-22B, W639-174-20B, OR W552-43-20B BETWEEN PLUG 171P4 AND **RH FUEL PUMPS MAIN FWD** CB 171CB3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W629-40-22C, W639-175-20C, OR W552-44-20C BETWEEN PLUG 171P4 AND **RH FUEL PUMPS MAIN FWD** CB 171CB3. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN S. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-43-22 BETWEEN PLUG 171P4 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-6-22C FROM RELAY 171K1 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-6-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K1.

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10-2.12 RH FUEL PUMP MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

YES → DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN U. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W629-41-22 BETWEEN PLUG 171P4 AND RECEPTACLE 300J35. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓

REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-4-22A FROM RELAY 171K1 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

NO → REPLACE RELAY 171K1.

YES → LOCATE GROUND FAULT ON WIRE W529-4-22A. REPAIR OR REPLACE WIRE AS REQUIRED.

YES → DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN T. IS GROUND PRESENT?

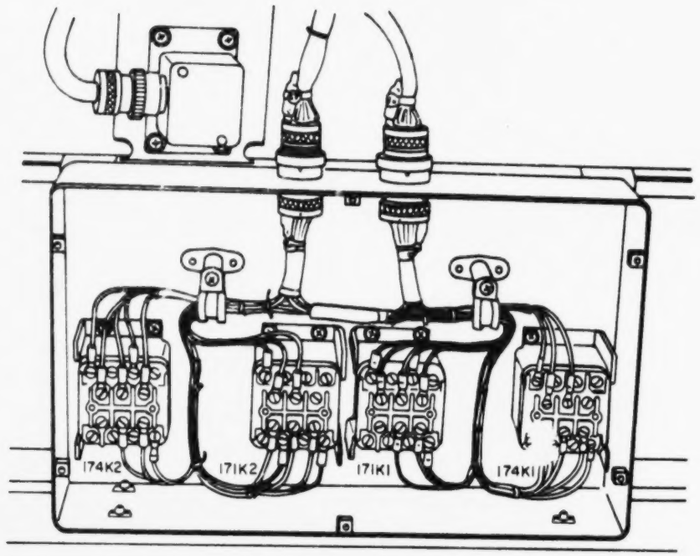
YES → LOCATE GROUND FAULT ON WIRE W629-42-22 BETWEEN PLUG 171P3 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓

REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-5-22B FROM RELAY 171K1 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

NO → REPLACE RELAY 171K1.

YES → LOCATE GROUND FAULT ON WIRE W529-5-22B. REPAIR OR REPLACE WIRE AS REQUIRED.



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END OF TASK

10-2.13 RH FUEL PUMP MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

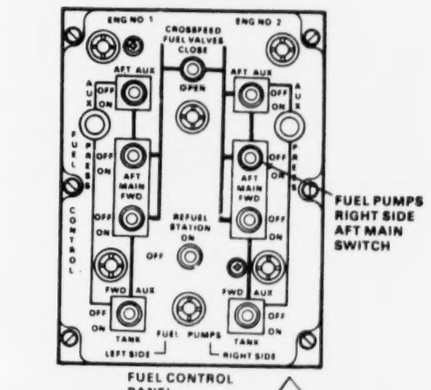
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

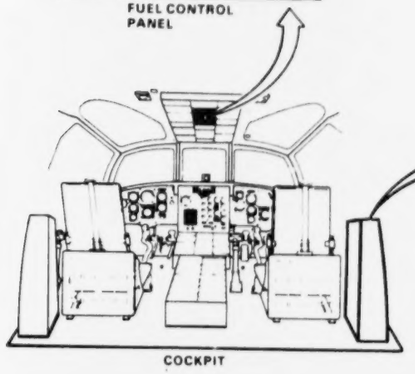
Materials:
None

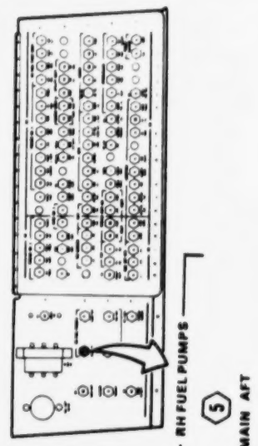
Personnel Required:
Aircraft Electrician (2)

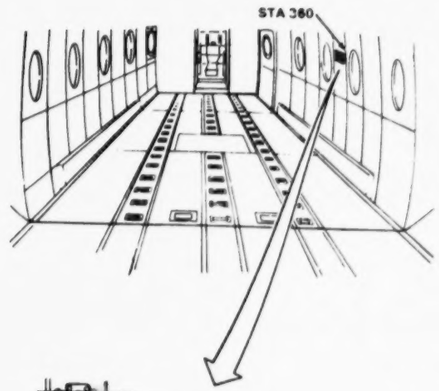
References:
TM 55-1520-240-23

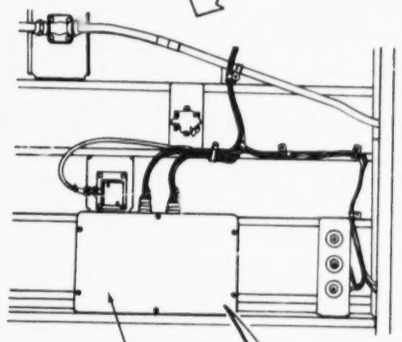
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Aft Intertank Access Panel Open

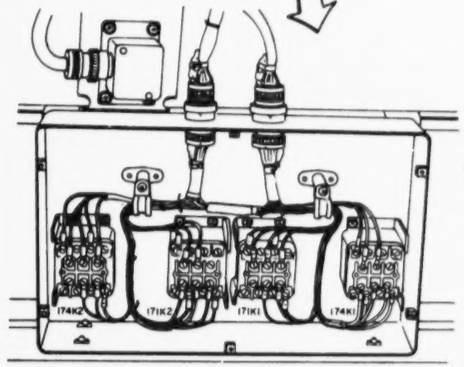


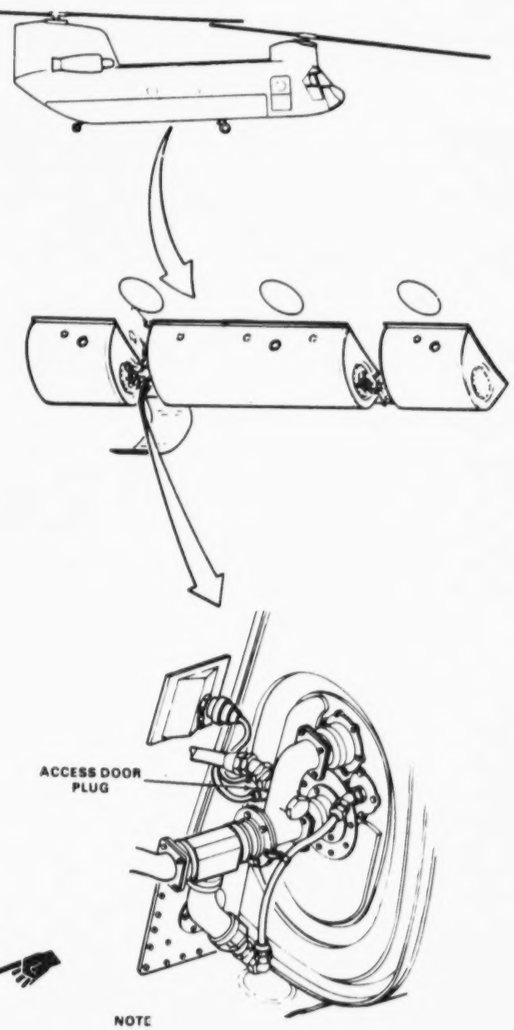












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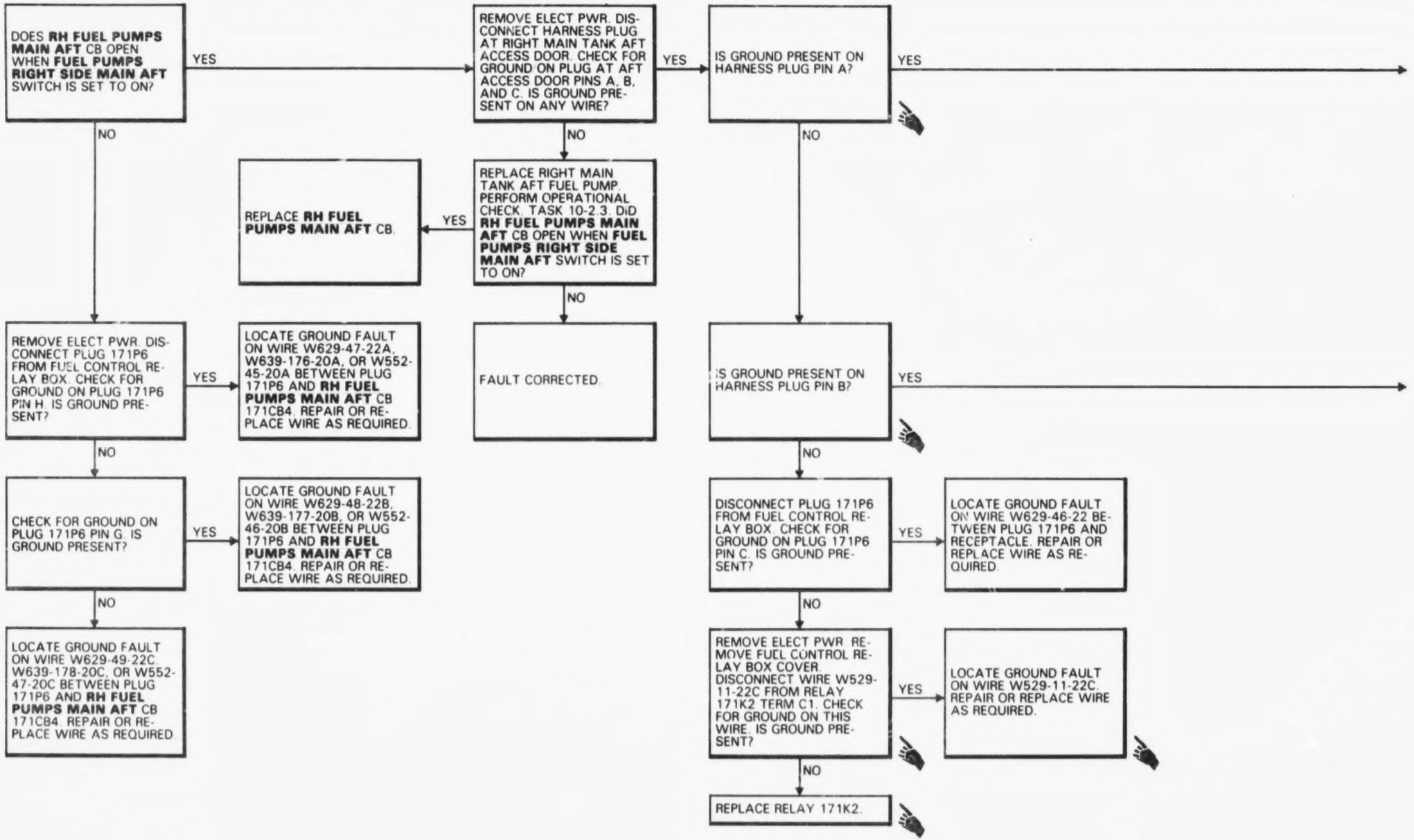
DOES **RH FUEL PUMPS MAIN AFT** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH IS SET TO ON?
YES
NO
REMOVE ELECT PWR. DISCONNECT HARNESS PLUG AT RIGHT MAIN TANK AFT ACCESS DOOR. CHECK FOR GROUND ON PLUG AT AFT ACCESS DOOR PINS A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE **RH FUEL PUMPS MAIN AFT** CB.
YES
REPLACE RIGHT MAIN TANK AFT FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **RH FUEL PUMPS MAIN AFT** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH IS SET TO ON?
NO
FAULT CORRECTED.
REMOVE ELECT PWR. DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN H. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-47-22A, W639-176-20A, OR W552-45-20A BETWEEN PLUG 171P6 AND **RH FUEL PUMPS MAIN AFT** CB 171CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 171P6 PIN G. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-48-22B, W639-177-20B, OR W552-46-20B BETWEEN PLUG 171P6 AND **RH FUEL PUMPS MAIN AFT** CB 171CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W629-49-22C W639-178-20C, OR W552-47-20C BETWEEN PLUG 171P6 AND **RH FUEL PUMPS MAIN AFT** CB 171CB4. REPAIR OR REPLACE WIRE AS REQUIRED
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN C. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-46-22 BETWEEN PLUG 171P6 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-11-22C FROM RELAY 171K2 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-11-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K2.

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10-2.13 RH FUEL PUMP MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

YES → DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN A. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W629-44-22 BETWEEN PLUG 171P6 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-13-22A FROM RELAY 171K2 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W529-13-22A. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → REPLACE RELAY 171K2.

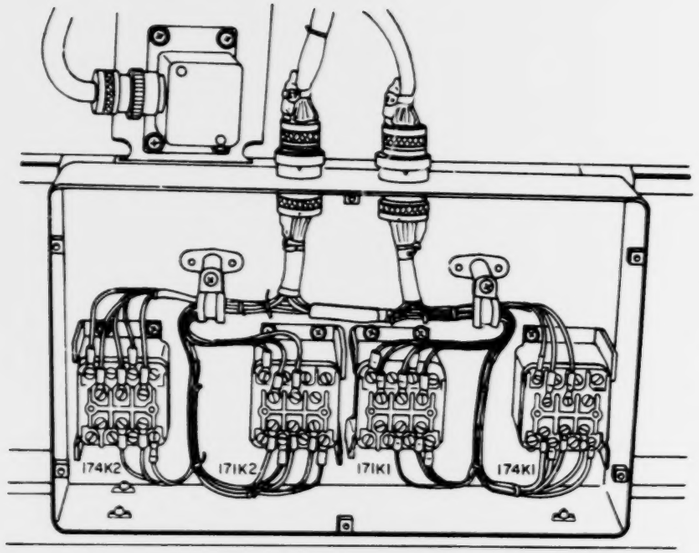
YES → DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN B. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W629-45-22 BETWEEN PLUG 171P6 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-12-22B FROM RELAY 171K2 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W529-12-22B. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → REPLACE RELAY 171K2.



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END OF TASK

10-2.14 RH FUEL PUMP AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED 10-2.14

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

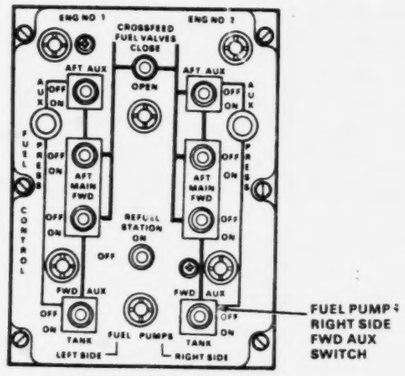
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

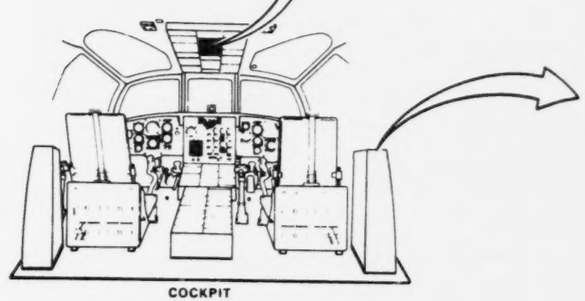
Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

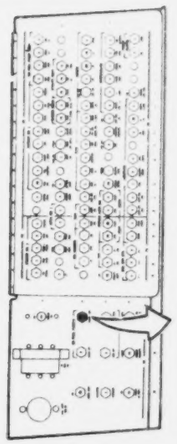
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Forward Landing Gear Access Panel Open



FUEL CONTROL PANEL

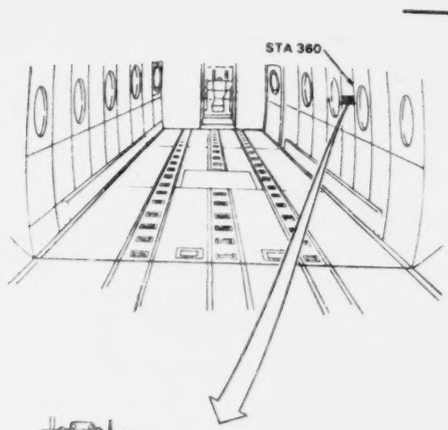


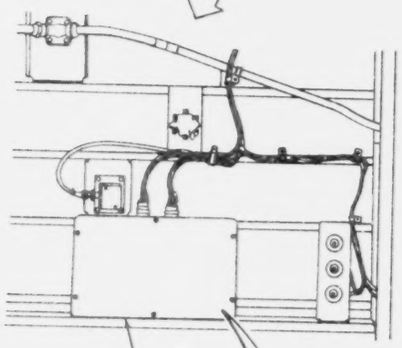
COCKPIT



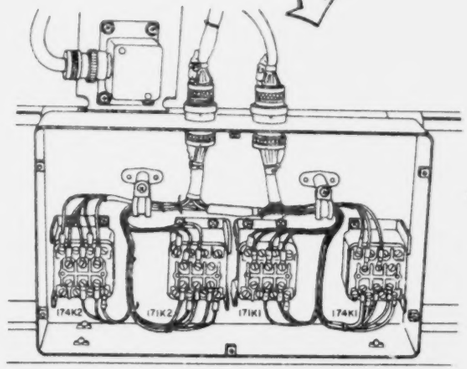
NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

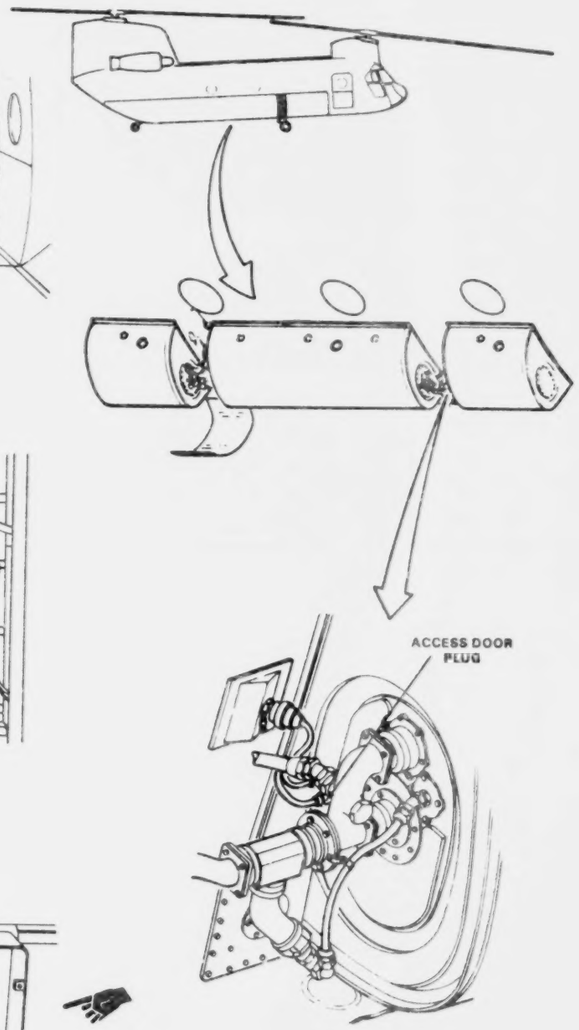
RH FUEL PUMPS (5) AUX FWD





FUEL CONTROL RELAY BOX





NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS

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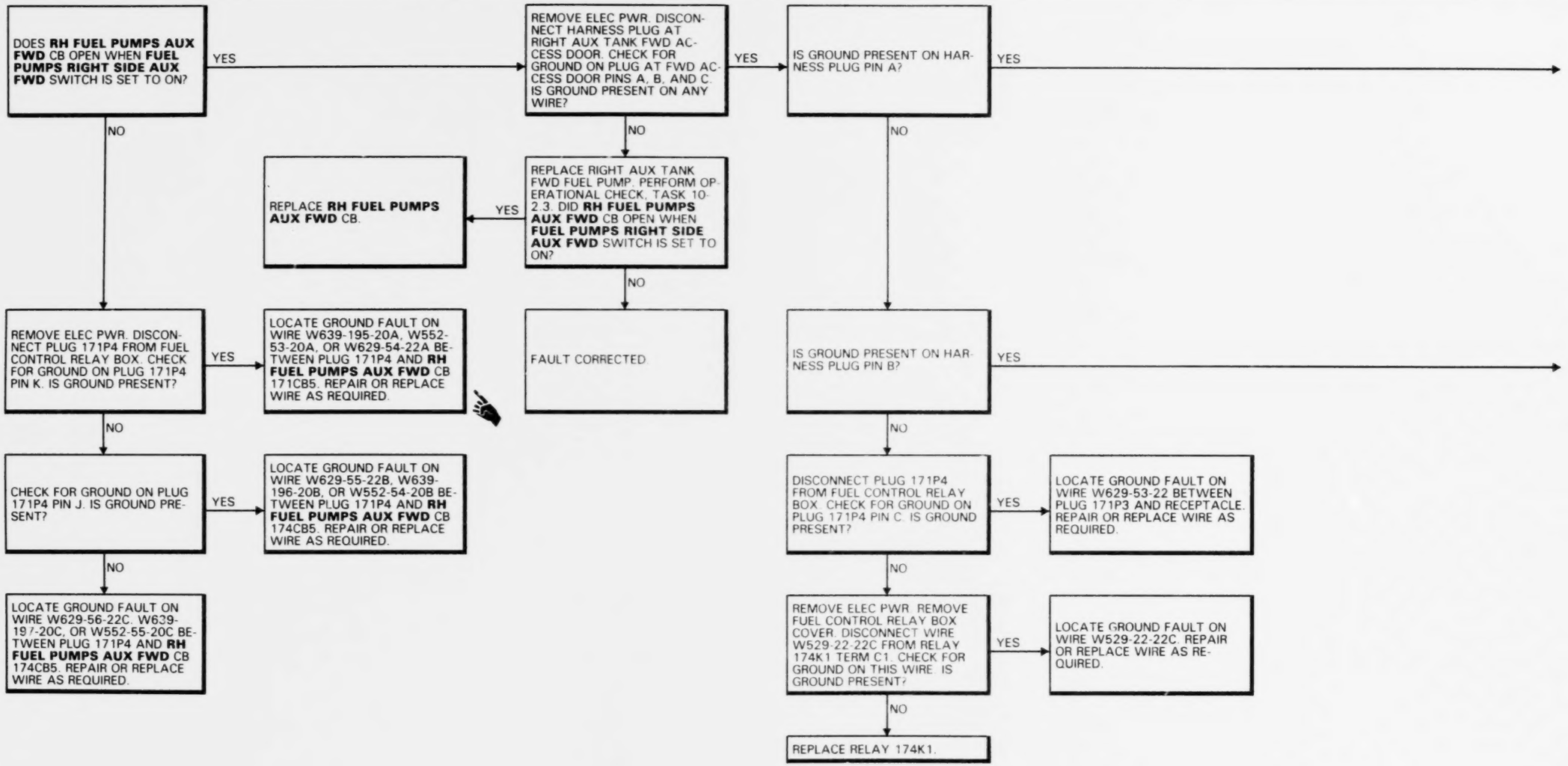
DOES **RH FUEL PUMPS AUX FWD** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE AUX FWD** SWITCH IS SET TO ON?
YES
NO
REMOVE ELEC PWR. DISCONNECT HARNESS PLUG AT RIGHT AUX TANK FWD ACCESS DOOR. CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PINS A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE RIGHT AUX TANK FWD FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **RH FUEL PUMPS AUX FWD** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE AUX FWD** SWITCH IS SET TO ON?
YES
REPLACE **RH FUEL PUMPS AUX FWD** CB.
NO
FAULT CORRECTED.
REMOVE ELEC PWR. DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN K. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W639-195-20A, W552-53-20A, OR W629-54-22A BETWEEN PLUG 171P4 AND **RH FUEL PUMPS AUX FWD** CB 171CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 171P4 PIN J. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-55-22B, W639-196-20B, OR W552-54-20B BETWEEN PLUG 171P4 AND **RH FUEL PUMPS AUX FWD** CB 174CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W629-56-22C. W639-197-20C, OR W552-55-20C BETWEEN PLUG 171P4 AND **RH FUEL PUMPS AUX FWD** CB 174CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN C. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-53-22 BETWEEN PLUG 171P3 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-22-22C FROM RELAY 174K1 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-22-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K1.

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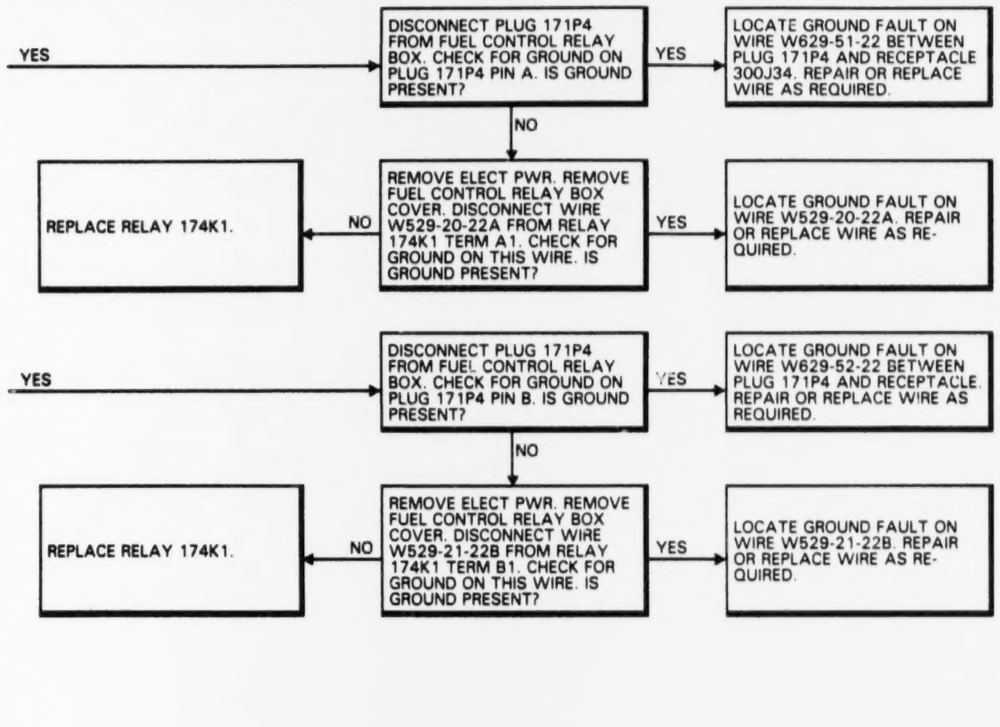
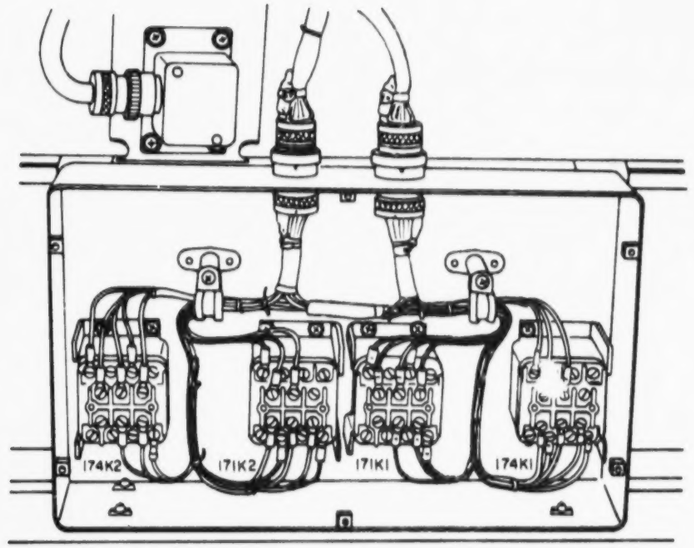

YES
DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-51-22 BETWEEN PLUG 171P4 AND RECEPTACLE 300J34. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K1.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-20-22A FROM RELAY 174K1 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-20-22A. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-52-22 BETWEEN PLUG 171P4 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K1.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-21-22B FROM RELAY 174K1 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-21-22B. REPAIR OR REPLACE WIRE AS REQUIRED.



9682

END OF TASK

10-2.15 RH FUEL PUMP AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

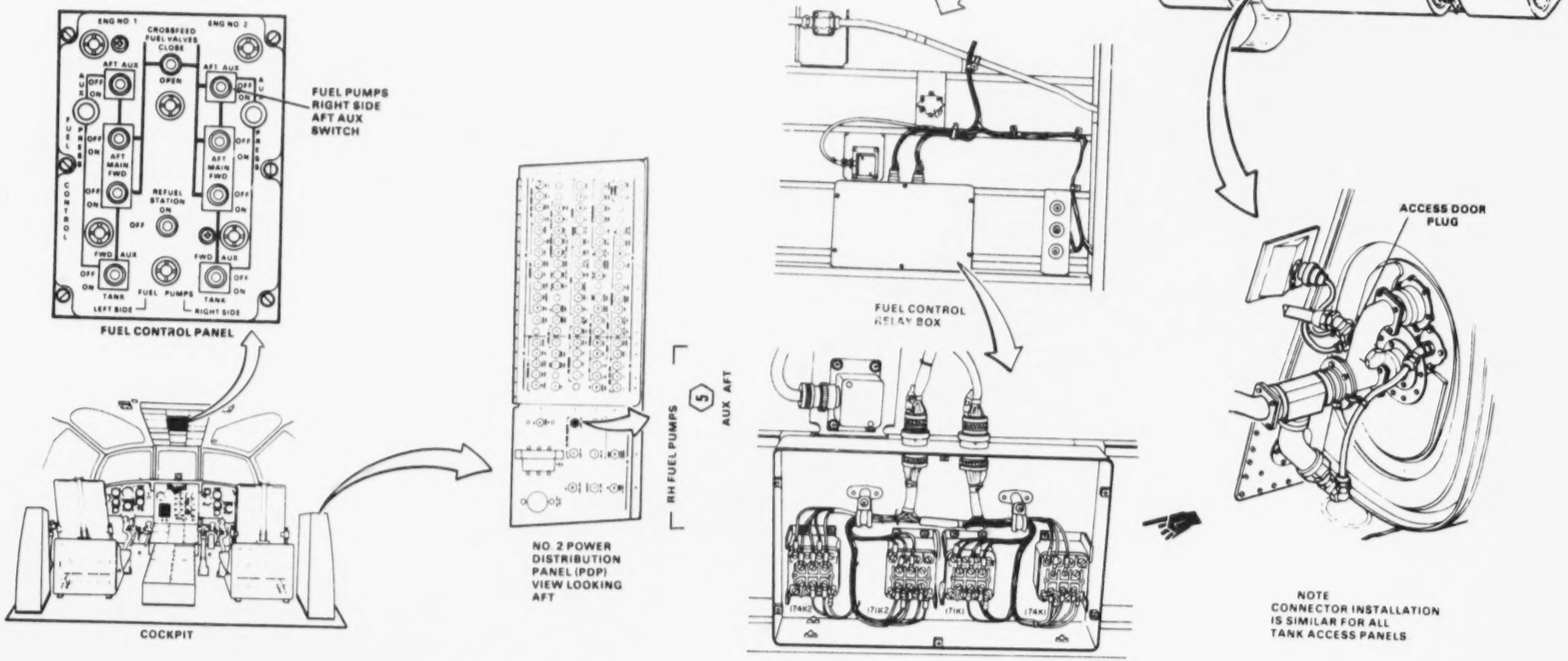
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Aft Intertank Access Panel Open



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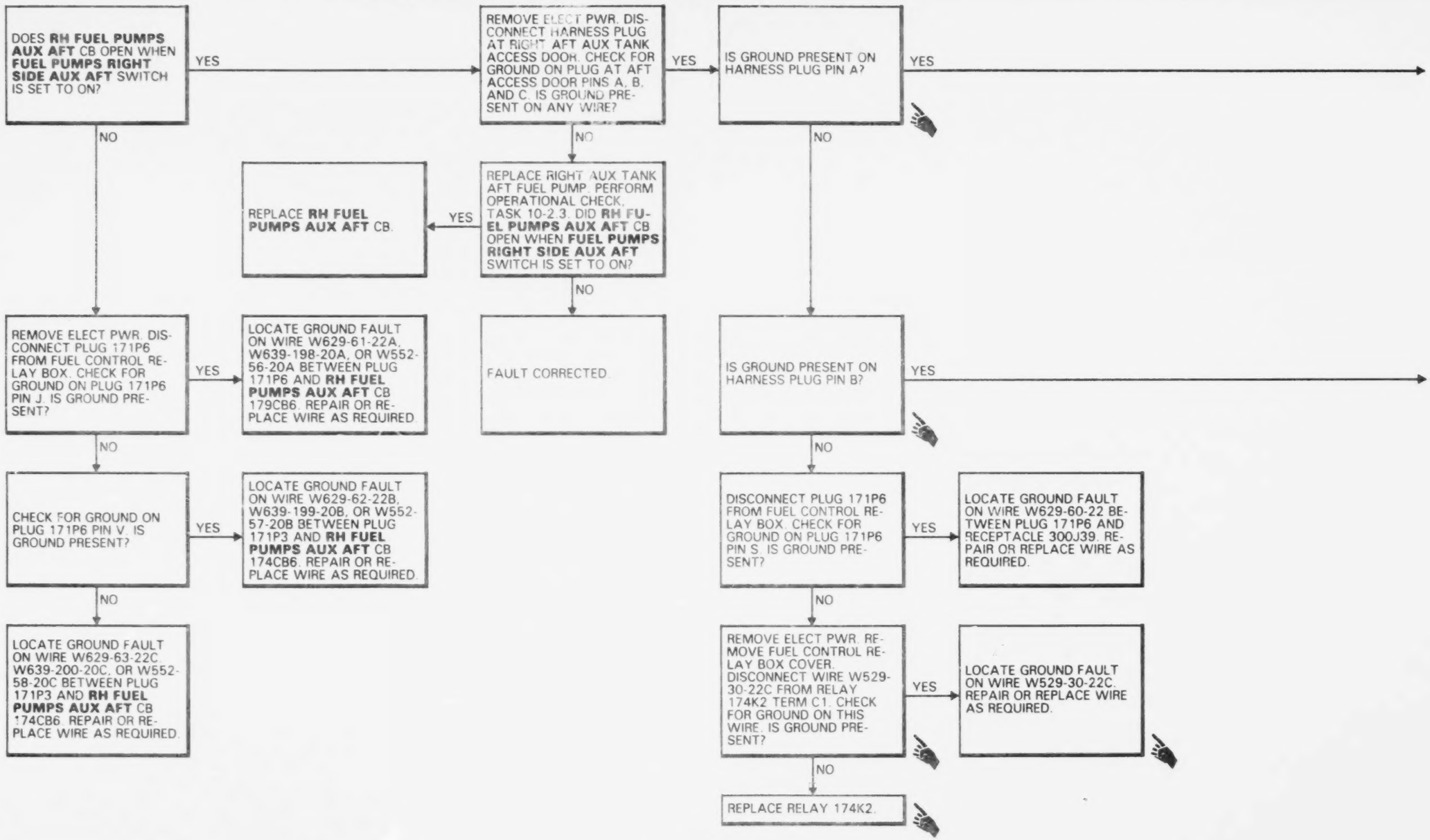

DOES **RH FUEL PUMPS AUX AFT** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE AUX AFT** SWITCH IS SET TO ON?
YES
NO
REMOVE ELECT PWR. DISCONNECT HARNESS PLUG AT RIGHT AFT AUX TANK ACCESS DOOR. CHECK FOR GROUND ON PLUG AT AFT ACCESS DOOR PINS A, B, AND C. IS GROUND PRESENT ON ANY WIRE?
YES
NO
IS GROUND PRESENT ON HARNESS PLUG PIN A?
YES
NO
REPLACE RIGHT AUX TANK AFT FUEL PUMP. PERFORM OPERATIONAL CHECK, TASK 10-2.3. DID **RH FUEL PUMPS AUX AFT** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE AUX AFT** SWITCH IS SET TO ON?
YES
REPLACE **RH FUEL PUMPS AUX AFT** CB.
NO
FAULT CORRECTED.
REMOVE ELECT PWR. DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN J. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-61-22A, W639-198-20A, OR W552-56-20A BETWEEN PLUG 171P6 AND **RH FUEL PUMPS AUX AFT** CB 179CB6. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 171P6 PIN V. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-62-22B, W639-199-20B, OR W552-57-20B BETWEEN PLUG 171P3 AND **RH FUEL PUMPS AUX AFT** CB 174CB6. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W629-63-22C, W639-200-20C, OR W552-58-20C BETWEEN PLUG 171P3 AND **RH FUEL PUMPS AUX AFT** CB 174CB6. REPAIR OR REPLACE WIRE AS REQUIRED.
IS GROUND PRESENT ON HARNESS PLUG PIN B?
YES
NO
DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN S. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-60-22 BETWEEN PLUG 171P6 AND RECEPTACLE 300J39. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-30-22C FROM RELAY 174K2 TERM C1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-30-22C. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 174K2.

GO TO NEXT PAGE

10-2.15 RH FUEL PUMP AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

YES → DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN U. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W629-58-22 BETWEEN PLUG 171P6 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓

REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-28-22A FROM RELAY 174K2 TERM A1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

NO → REPLACE RELAY 174K2.

YES → LOCATE GROUND FAULT ON WIRE W529-28-22A. REPAIR OR REPLACE WIRE AS REQUIRED.

YES → DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN T. IS GROUND PRESENT?

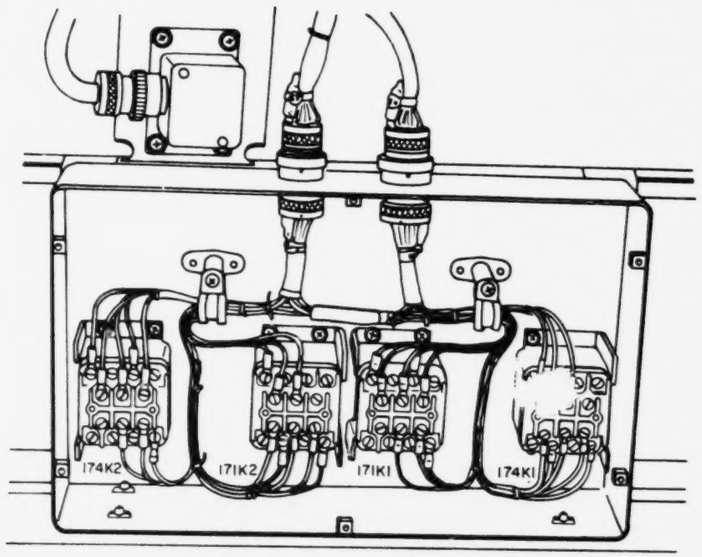
YES → LOCATE GROUND FAULT ON WIRE W629-59-22 BETWEEN PLUG 171P6 AND RECEPTACLE 174J5. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓

REMOVE ELECT PWR. REMOVE FUEL CONTROL RELAY BOX COVER. DISCONNECT WIRE W529-29-22B FROM RELAY 174K2 TERM B1. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?

NO → REPLACE RELAY 174K2.

YES → LOCATE GROUND FAULT ON WIRE W529-29-22A. REPAIR OR REPLACE WIRE AS REQUIRED.



9683

END OF TASK

10-2.16 RH FUEL PUMP CONT AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

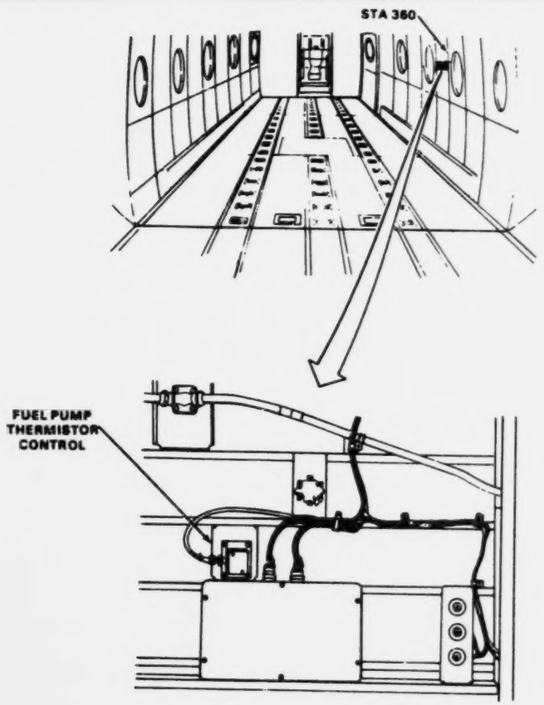
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

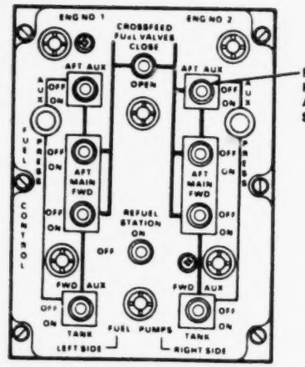
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

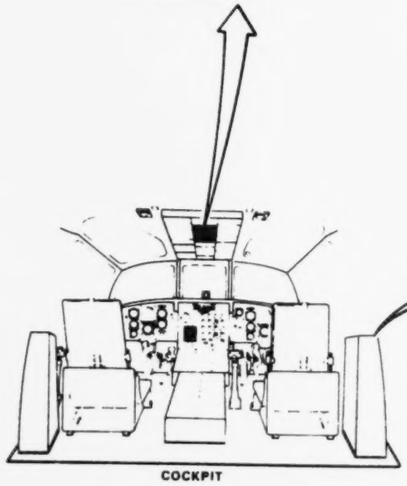
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed
Between Sta 320 and 360.

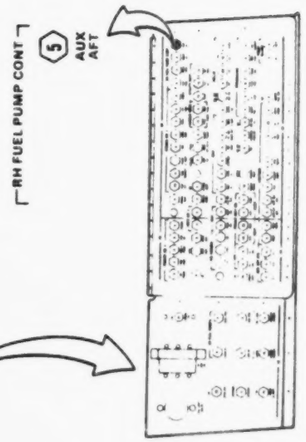




FUEL CONTROL PANEL



COCKPIT



NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

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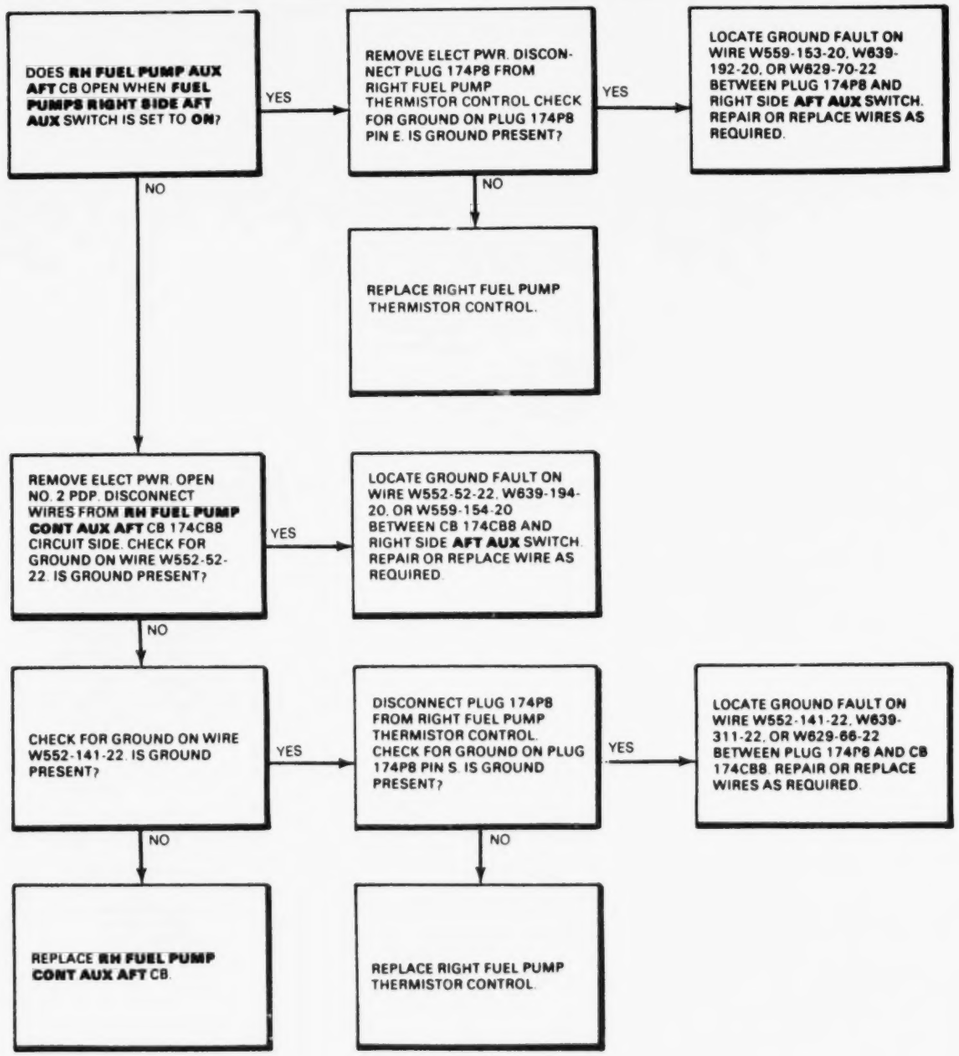
90 X 54

10-2.16 RH FUEL PUMP CONT AUX AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **RH FUEL PUMP AUX AFT** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE AFT AUX** SWITCH IS SET TO **ON**?
YES
REMOVE ELECT PWR. DISCONNECT PLUG 174P8 FROM RIGHT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P8 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-153-20, W639-192-20, OR W629-70-22 BETWEEN PLUG 174P8 AND RIGHT SIDE **AFT AUX** SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
REPLACE RIGHT FUEL PUMP THERMISTOR CONTROL.
NO
REMOVE ELECT PWR. OPEN NO. 2 PDP. DISCONNECT WIRES FROM **RH FUEL PUMP CONT AUX AFT** CB 174CB8 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W552-52-22. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W552-52-22, W639-194-20, OR W559-154-20 BETWEEN CB 174CB8 AND RIGHT SIDE **AFT AUX** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON WIRE W552-141-22. IS GROUND PRESENT?
YES
DISCONNECT PLUG 174P8 FROM RIGHT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P8 PIN S. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W552-141-22, W639-311-22, OR W629-66-22 BETWEEN PLUG 174P8 AND CB 174CB8. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
REPLACE **RH FUEL PUMP CONT AUX AFT** CB.
NO
REPLACE RIGHT FUEL PUMP THERMISTOR CONTROL.

END OF TASK

10-2.17 RH FUEL PUMP CONT MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED 10-2.17

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

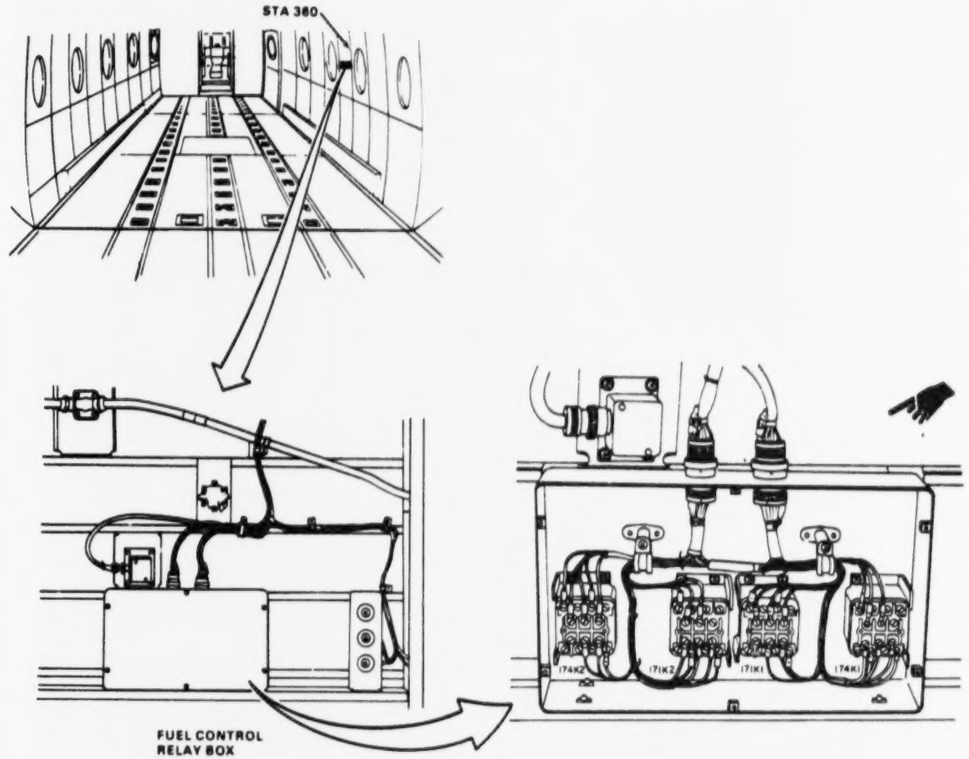
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

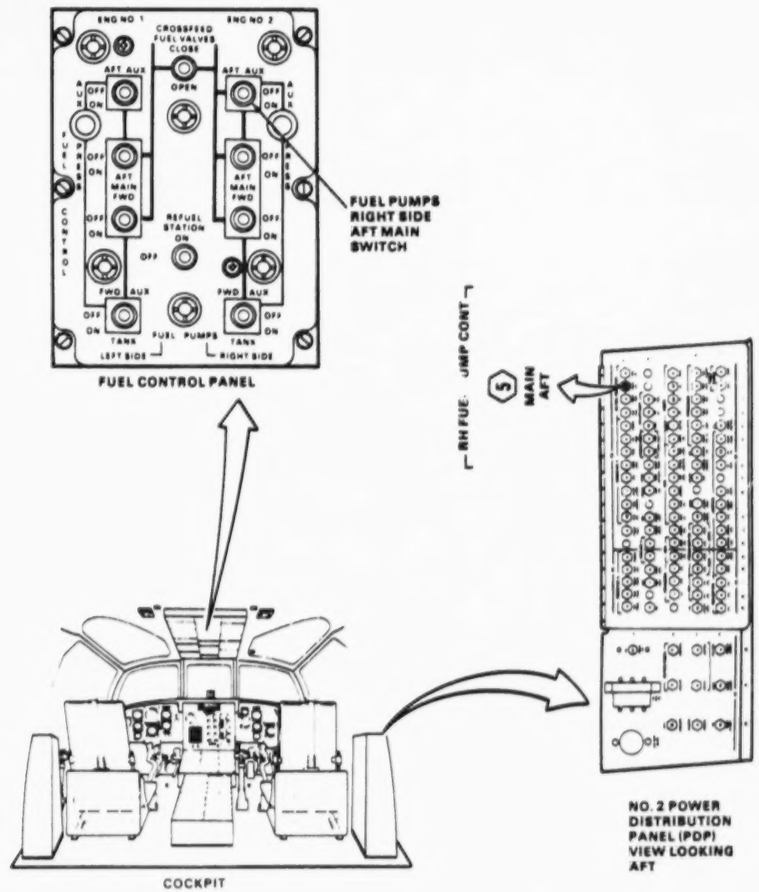
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360





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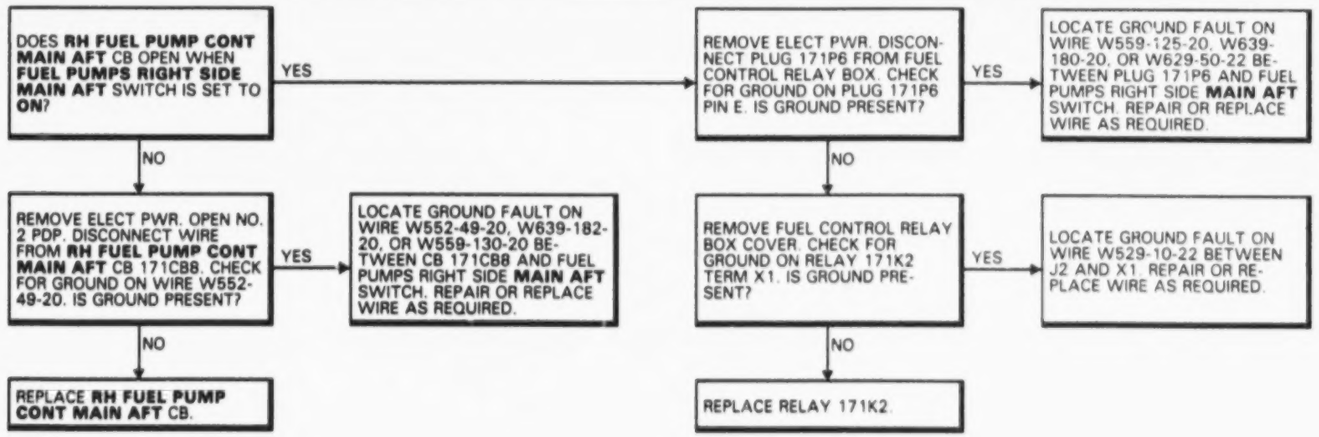
10-2.17 RH FUEL PUMP CONT MAIN AFT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **RH FUEL PUMP CONT MAIN AFT** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELECT PWR. OPEN NO. 2 PDP. DISCONNECT WIRE FROM **RH FUEL PUMP CONT MAIN AFT** CB 171CB8. CHECK FOR GROUND ON WIRE W552-49-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W552-49-20, W639-182-20, OR W559-130-20 BETWEEN CB 171CB8 AND FUEL PUMPS RIGHT SIDE **MAIN AFT** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE **RH FUEL PUMP CONT MAIN AFT** CB.
REMOVE ELECT PWR. DISCONNECT PLUG 171P6 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P6 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-125-20, W639-180-20, OR W629-50-22 BETWEEN PLUG 171P6 AND FUEL PUMPS RIGHT SIDE **MAIN AFT** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE FUEL CONTROL RELAY BOX COVER. CHECK FOR GROUND ON RELAY 171K2 TERM X1. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-10-22 BETWEEN J2 AND X1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K2.

END OF TASK

10-2.18 RH FUEL PUMP CONT MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED 10-2.18

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

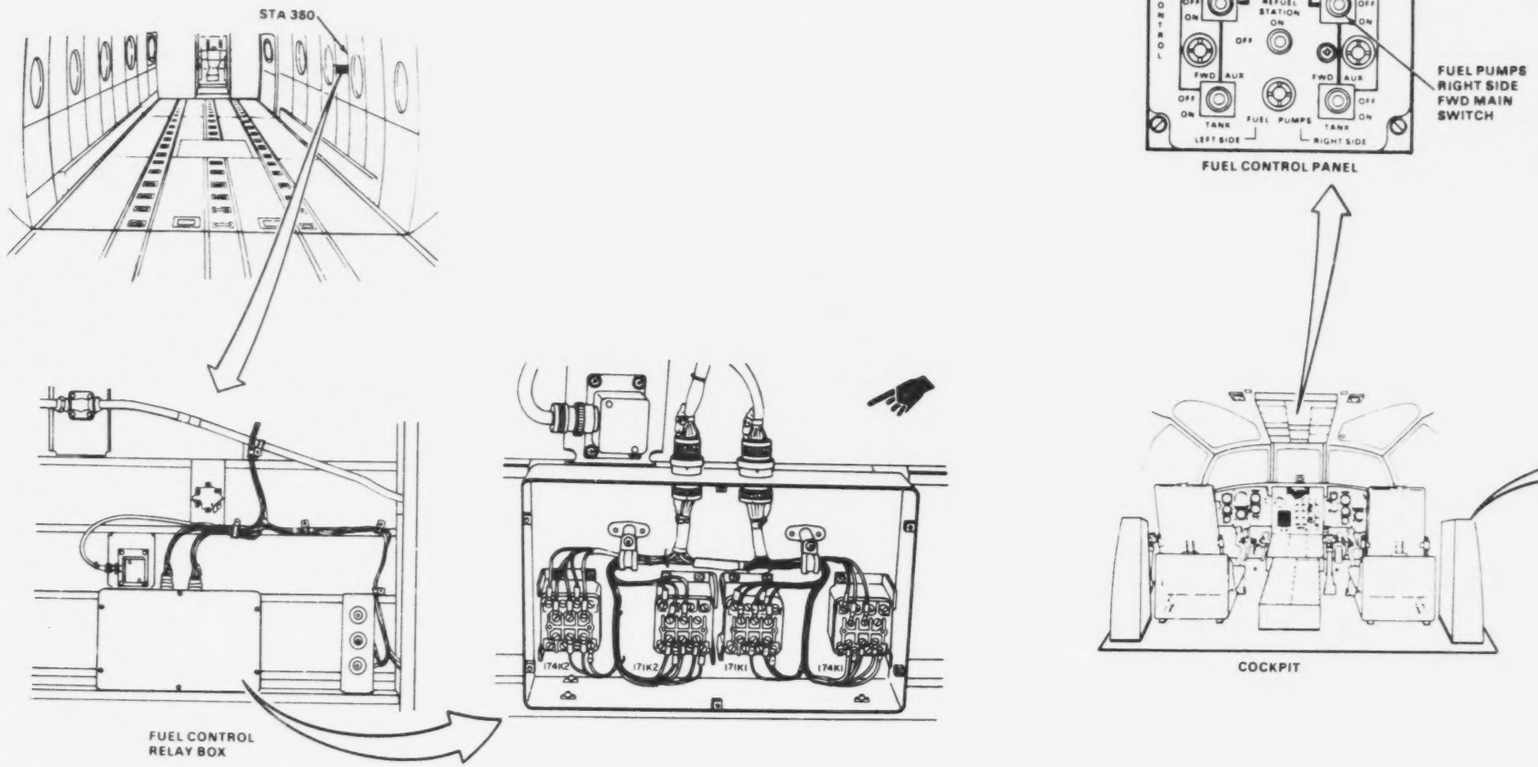
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360



9628

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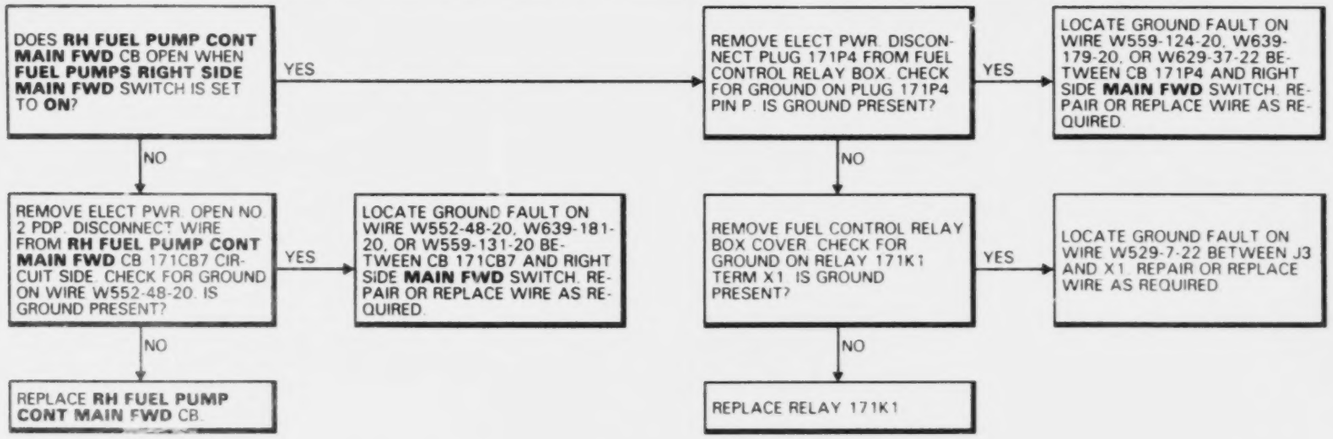
10-2.18 RH FUEL PUMP CONT MAIN FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **RH FUEL PUMP CONT MAIN FWD** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE MAIN FWD** SWITCH IS SET TO **ON**?
YES
NO
REMOVE ELECT PWR. OPEN NO 2 PDP. DISCONNECT WIRE FROM **RH FUEL PUMP CONT MAIN FWD** CB 171CB7 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W552-48-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W552-48-20, W639-181-20, OR W559-131-20 BETWEEN CB 171CB7 AND RIGHT SIDE **MAIN FWD** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE **RH FUEL PUMP CONT MAIN FWD** CB.
REMOVE ELECT PWR. DISCONNECT PLUG 171P4 FROM FUEL CONTROL RELAY BOX. CHECK FOR GROUND ON PLUG 171P4 PIN P. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-124-20, W639-179-20, OR W629-37-22 BETWEEN CB 171P4 AND RIGHT SIDE **MAIN FWD** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE FUEL CONTROL RELAY BOX COVER. CHECK FOR GROUND ON RELAY 171K1 TERM X1. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W529-7-22 BETWEEN J3 AND X1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 171K1

END OF TASK

10-2.19 RH FUEL PUMP CONT AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

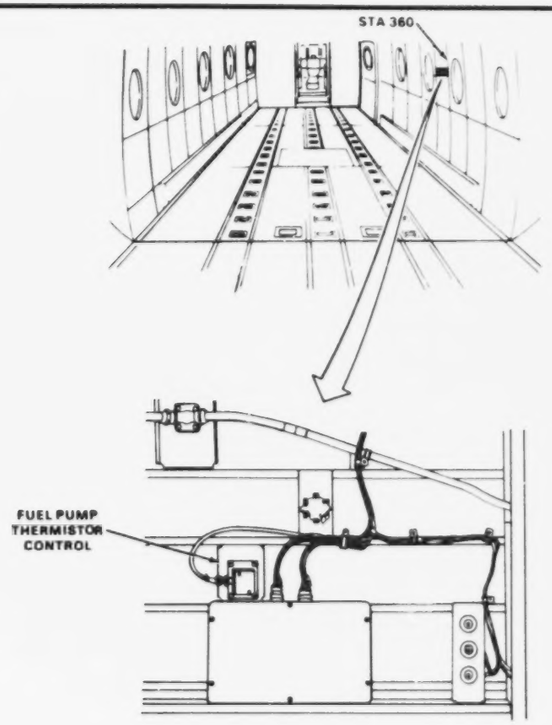
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

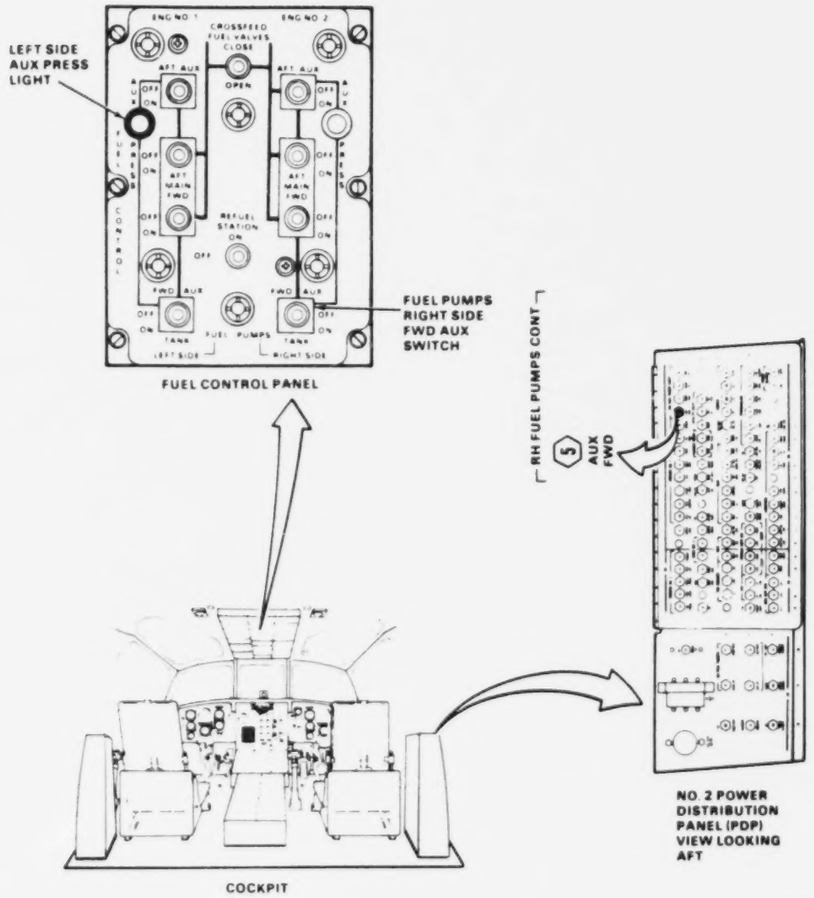
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360




LEFT SIDE AUX PRESS LIGHT
FUEL PUMPS RIGHT SIDE FWD AUX SWITCH
FUEL CONTROL PANEL
COCKPIT
RH FUEL PUMPS CONT
5 AUX FWD
NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

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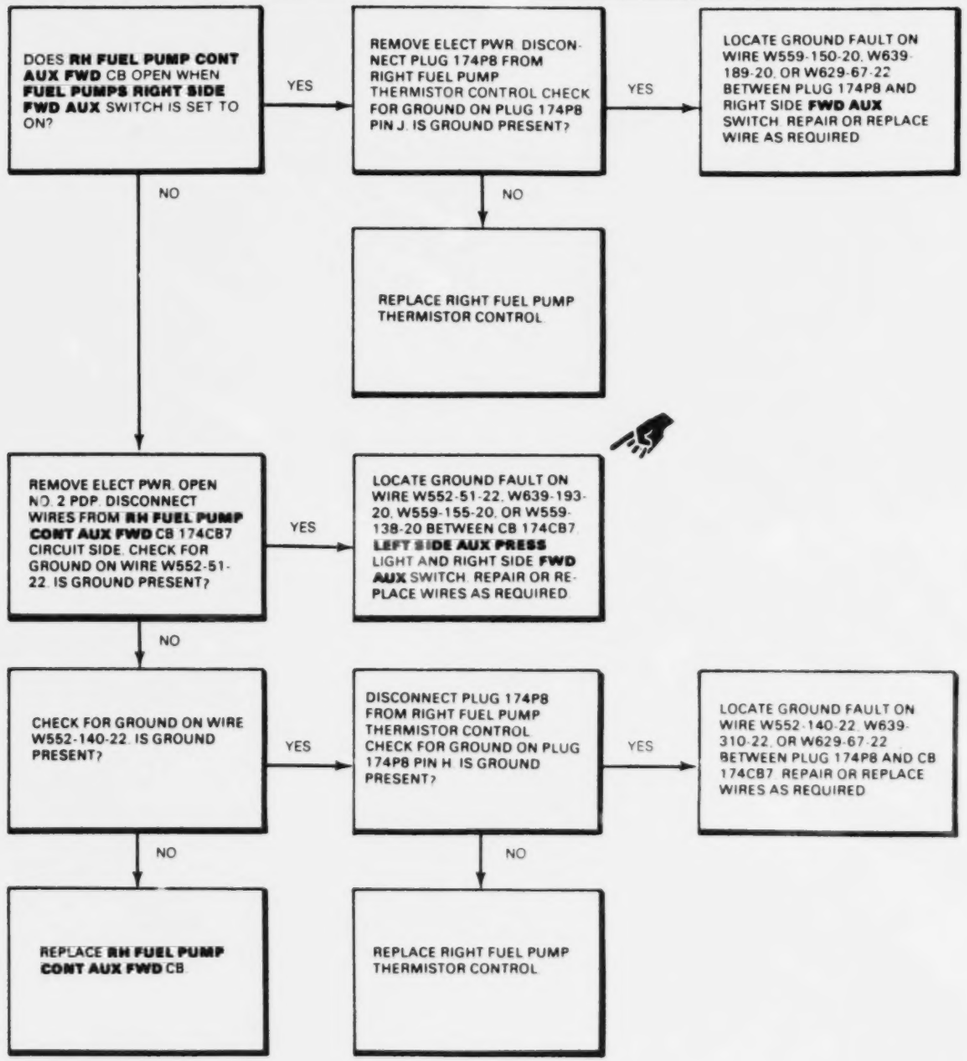
10-2.19 RH FUEL PUMP CONT AUX FWD CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **RH FUEL PUMP CONT AUX FWD** CB OPEN WHEN **FUEL PUMPS RIGHT SIDE FWD AUX** SWITCH IS SET TO ON?
YES
REMOVE ELECT PWR. DISCONNECT PLUG 174P8 FROM RIGHT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P8 PIN J. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-150-20, W639-189-20, OR W629-67-22 BETWEEN PLUG 174P8 AND RIGHT SIDE **FWD AUX** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
REPLACE RIGHT FUEL PUMP THERMISTOR CONTROL
REMOVE ELECT PWR. OPEN NO. 2 PDP. DISCONNECT WIRES FROM **RH FUEL PUMP CONT AUX FWD** CB 174CB7 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W552-51-22. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W552-51-22, W639-193-20, W559-155-20, OR W559-138-20 BETWEEN CB 174CB7, **LEFT SIDE AUX PRESS** LIGHT AND RIGHT SIDE **FWD AUX** SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED
NO
CHECK FOR GROUND ON WIRE W552-140-22. IS GROUND PRESENT?
YES
DISCONNECT PLUG 174P8 FROM RIGHT FUEL PUMP THERMISTOR CONTROL. CHECK FOR GROUND ON PLUG 174P8 PIN H. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W552-140-22, W639-310-22, OR W629-67-22 BETWEEN PLUG 174P8 AND CB 174CB7. REPAIR OR REPLACE WIRES AS REQUIRED
NO
NO
REPLACE **RH FUEL PUMP CONT AUX FWD** CB
REPLACE RIGHT FUEL PUMP THERMISTOR CONTROL

END OF TASK

10-2.20 LEFT OR RIGHT SIDE AUX PRESS LIGHTS DOES NOT COME ON WHEN PRESSED TO TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

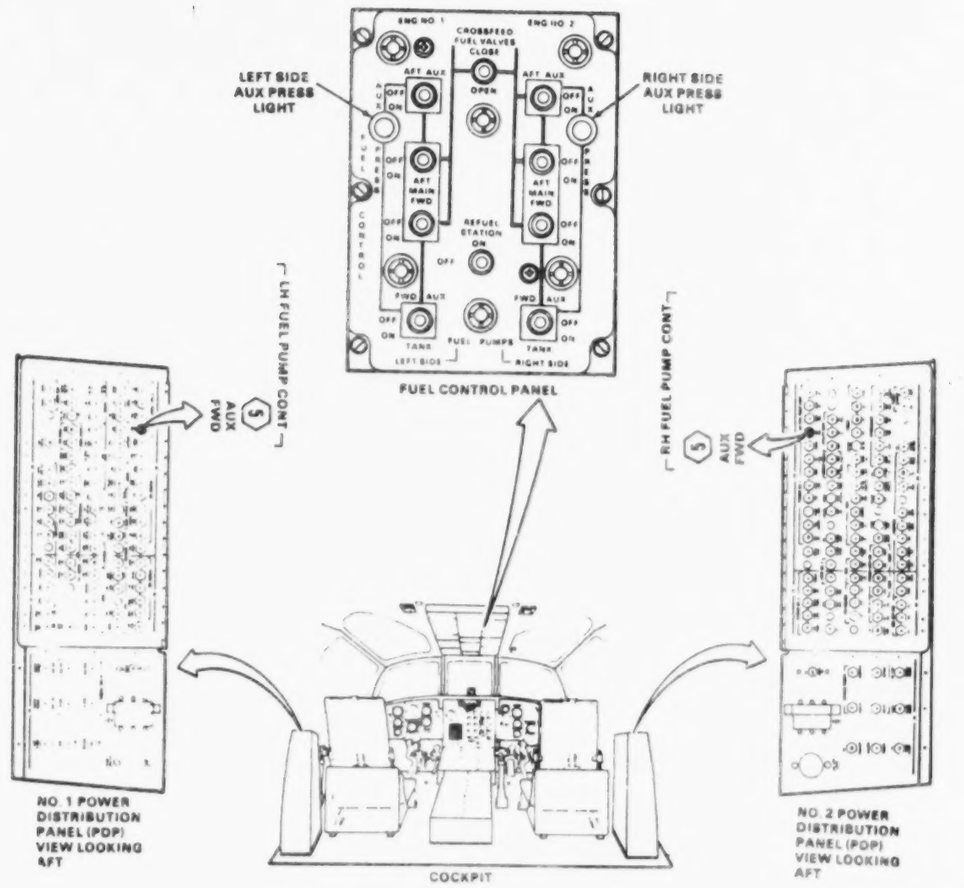
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off


LEFT SIDE AUX PRESS LIGHT
RIGHT SIDE AUX PRESS LIGHT
FUEL CONTROL PANEL
LH FUEL PUMP CONT
RH FUEL PUMP CONT
AUX FWD
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT
NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT
COCKPIT

KBX54

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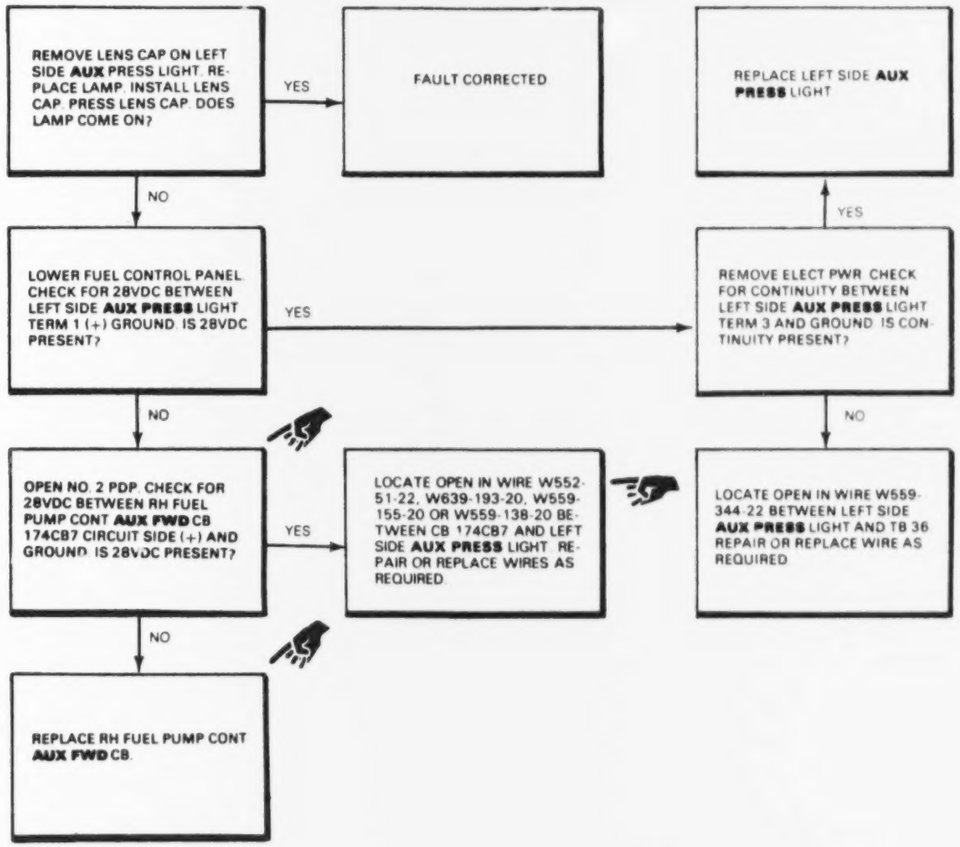
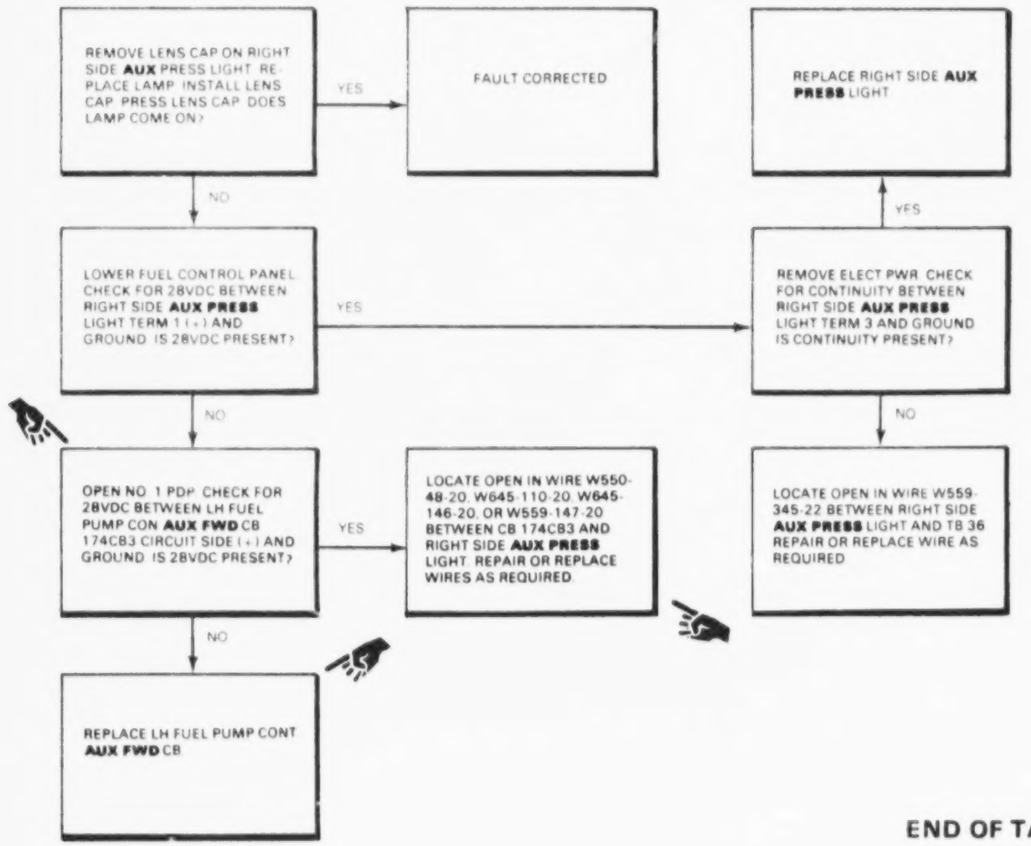
10-2.20 LEFT OR RIGHT SIDE AUX PRESS LIGHTS DOES NOT COME ON WHEN PRESSED TO TEST (Continued)

LEFT SIDE AUX PRESS LIGHT DOES NOT COME ON WHEN PRESSED TO TEST


REMOVE LENS CAP ON LEFT SIDE AUX PRESS LIGHT. REPLACE LAMP. INSTALL LENS CAP. PRESS LENS CAP. DOES LAMP COME ON?
YES
FAULT CORRECTED
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN LEFT SIDE AUX PRESS LIGHT TERM 1 (+) GROUND. IS 28VDC PRESENT?
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN LEFT SIDE AUX PRESS LIGHT TERM 3 AND GROUND. IS CONTINUITY PRESENT?
NO
OPEN NO. 2 PDP. CHECK FOR 28VDC BETWEEN RH FUEL PUMP CONT AUX FWD CB 174CB7 CIRCUIT SIDE (+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W552-51-22, W639-193-20, W559-155-20 OR W559-138-20 BETWEEN CB 174CB7 AND LEFT SIDE AUX PRESS LIGHT. REPAIR OR REPLACE WIRES AS REQUIRED.
LOCATE OPEN IN WIRE W559-344-22 BETWEEN LEFT SIDE AUX PRESS LIGHT AND TB 36. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RH FUEL PUMP CONT AUX FWD CB.
REPLACE LEFT SIDE AUX PRESS LIGHT
YES

RIGHT SIDE AUX PRESS LIGHT DOES NOT COME ON WHEN PRESSED TO TEST


REMOVE LENS CAP ON RIGHT SIDE AUX PRESS LIGHT. REPLACE LAMP. INSTALL LENS CAP. PRESS LENS CAP. DOES LAMP COME ON?
YES
FAULT CORRECTED
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN RIGHT SIDE AUX PRESS LIGHT TERM 1 (+) AND GROUND. IS 28VDC PRESENT?
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN RIGHT SIDE AUX PRESS LIGHT TERM 3 AND GROUND IS CONTINUITY PRESENT?
NO
OPEN NO. 1 PDP. CHECK FOR 28VDC BETWEEN LH FUEL PUMP CON AUX FWD CB 174CB3 CIRCUIT SIDE (+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W550-48-20, W645-110-20, W645-146-20, OR W559-147-20 BETWEEN CB 174CB3 AND RIGHT SIDE AUX PRESS LIGHT. REPAIR OR REPLACE WIRES AS REQUIRED.
LOCATE OPEN IN WIRE W559-345-22 BETWEEN RIGHT SIDE AUX PRESS LIGHT AND TB 36. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE LH FUEL PUMP CONT AUX FWD CB.
REPLACE RIGHT SIDE AUX PRESS LIGHT
YES

END OF TASK

10-2.21 L OR R FUEL PRESS CAPSULE IS NOT ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

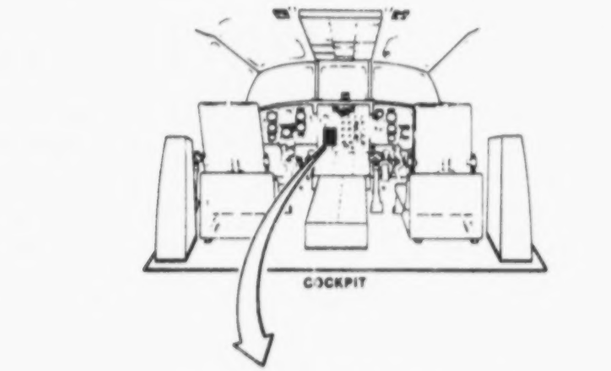
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Material:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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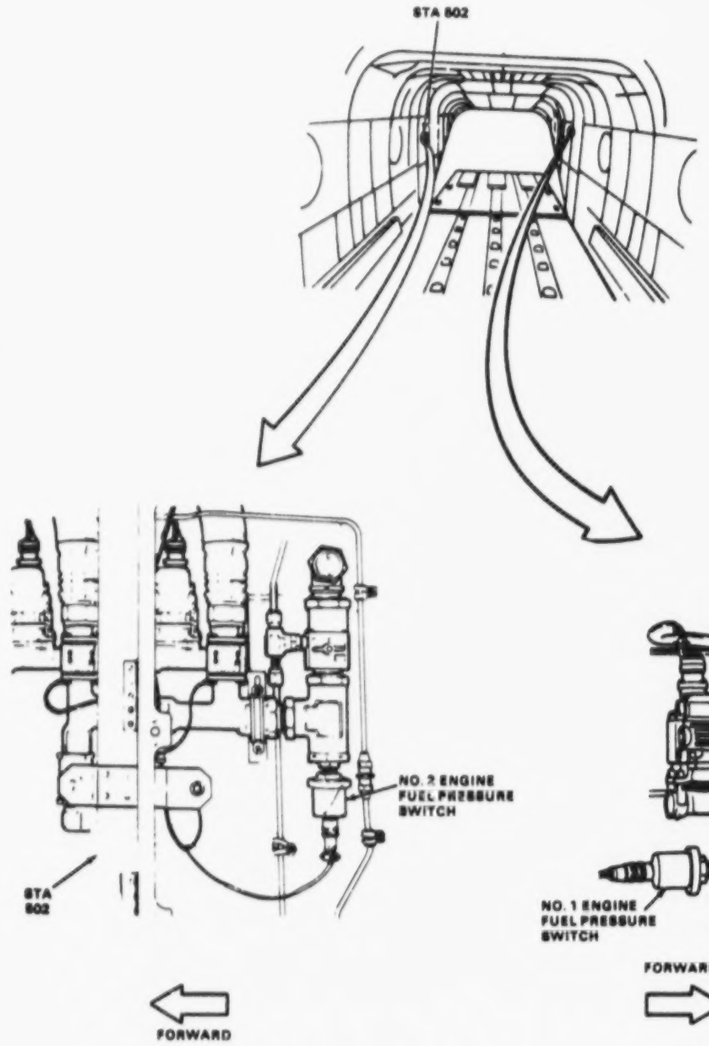

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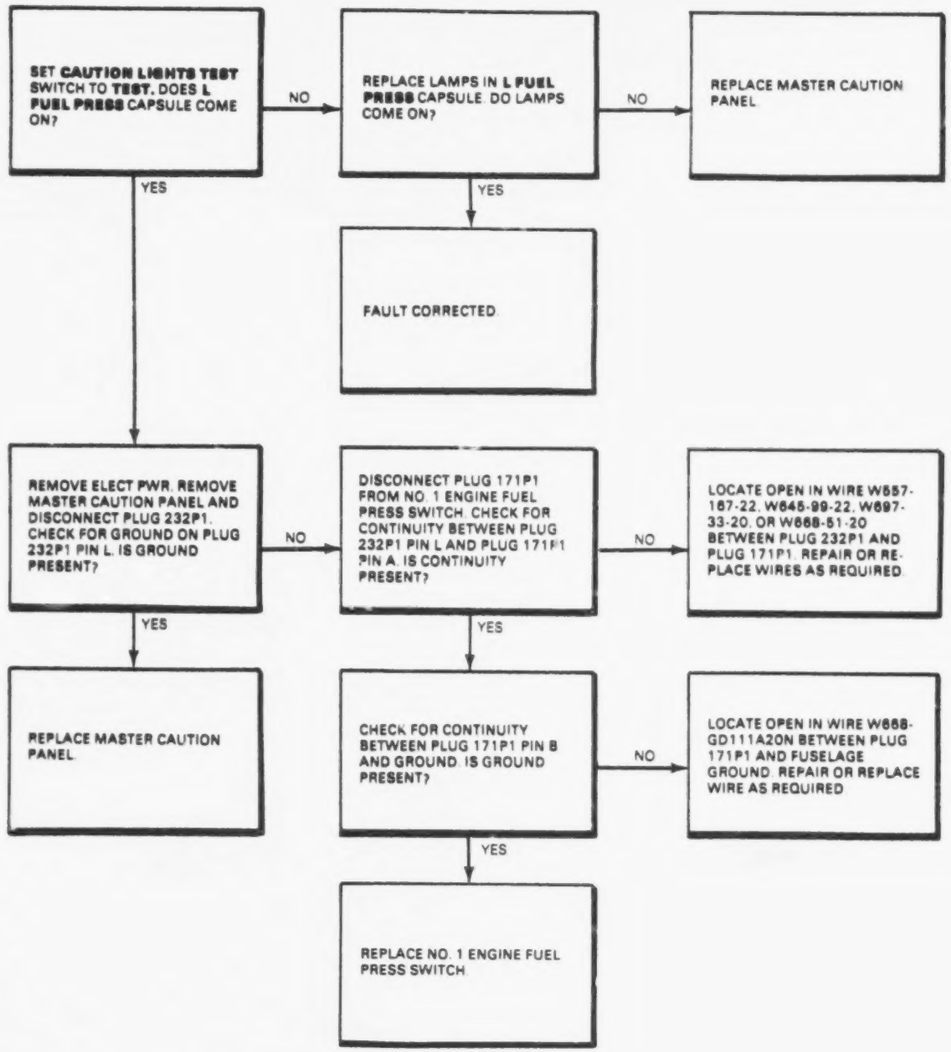
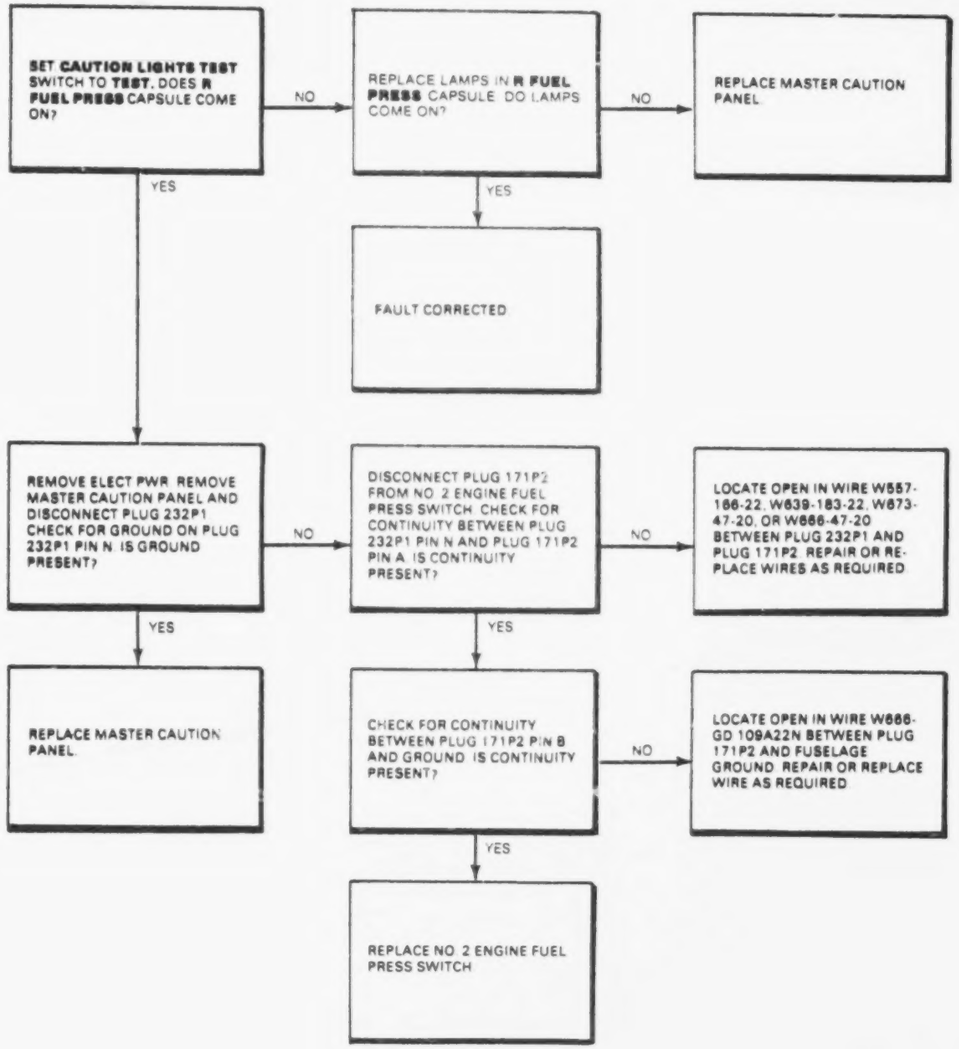
10-2.21 L OR R FUEL PRESS CAPSULE IS NOT ON (Continued)

L FUEL PRESS CAPSULE IS NOT ON


SET CAUTION LIGHTS TEST SWITCH TO TEST. DOES L FUEL PRESS CAPSULE COME ON?
NO
REPLACE LAMPS IN L FUEL PRESS CAPSULE. DO LAMPS COME ON?
NO
REPLACE MASTER CAUTION PANEL
YES
FAULT CORRECTED
YES
REMOVE ELECT PWR. REMOVE MASTER CAUTION PANEL AND DISCONNECT PLUG 232P1. CHECK FOR GROUND ON PLUG 232P1 PIN L. IS GROUND PRESENT?
NO
DISCONNECT PLUG 171P1 FROM NO. 1 ENGINE FUEL PRESS SWITCH. CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN L AND PLUG 171P1 PIN A. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W557-167-22, W645-99-22, W697-33-20, OR W668-51-20 BETWEEN PLUG 232P1 AND PLUG 171P1. REPAIR OR REPLACE WIRES AS REQUIRED
YES
REPLACE MASTER CAUTION PANEL
YES
CHECK FOR CONTINUITY BETWEEN PLUG 171P1 PIN B AND GROUND. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W668-GD111A20N BETWEEN PLUG 171P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
YES
REPLACE NO. 1 ENGINE FUEL PRESS SWITCH

R FUEL PRESS CAPSULE IS NOT ON


SET CAUTION LIGHTS TEST SWITCH TO TEST. DOES R FUEL PRESS CAPSULE COME ON?
NO
REPLACE LAMPS IN R FUEL PRESS CAPSULE. DO LAMPS COME ON?
NO
REPLACE MASTER CAUTION PANEL
YES
FAULT CORRECTED
YES
REMOVE ELECT PWR. REMOVE MASTER CAUTION PANEL AND DISCONNECT PLUG 232P1. CHECK FOR GROUND ON PLUG 232P1 PIN N. IS GROUND PRESENT?
NO
DISCONNECT PLUG 171P2 FROM NO. 2 ENGINE FUEL PRESS SWITCH. CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN N AND PLUG 171P2 PIN A. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W557-166-22, W639-183-22, W673-47-20, OR W666-47-20 BETWEEN PLUG 232P1 AND PLUG 171P2. REPAIR OR REPLACE WIRES AS REQUIRED
YES
REPLACE MASTER CAUTION PANEL
YES
CHECK FOR CONTINUITY BETWEEN PLUG 171P2 PIN B AND GROUND. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W666-GD 109A22N BETWEEN PLUG 171P2 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
YES
REPLACE NO. 2 ENGINE FUEL PRESS SWITCH

END OF TASK

10-2.22 L FUEL PRESS CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN AFT FUEL PUMPS SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

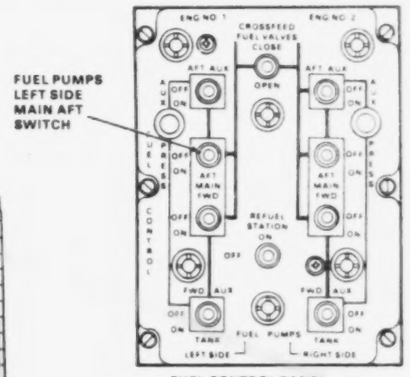
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

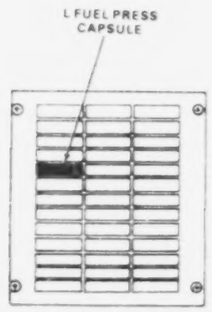
Materials:
None

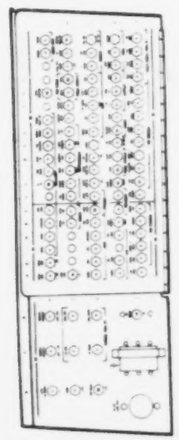
Personnel Required:
Aircraft Electrician (2)

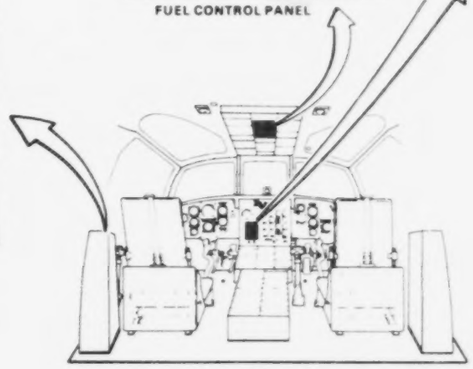
References:
TM 55-1520-240-23
TM 55-1520-240-10

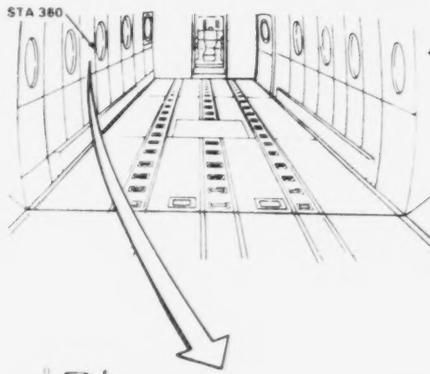
Equipment Condition:
TM 55-1520-240-10
Both Engines Shut Down
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Aft Intertank Access Panel Open

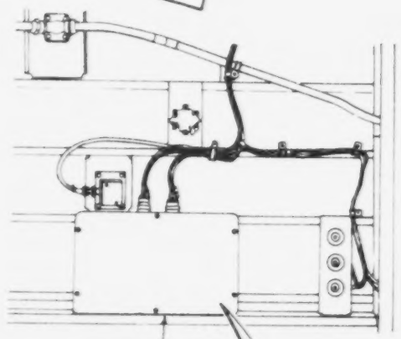


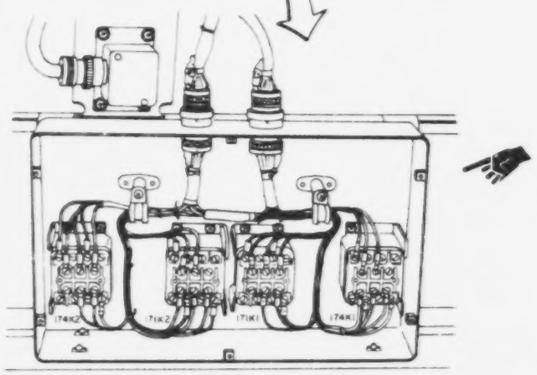


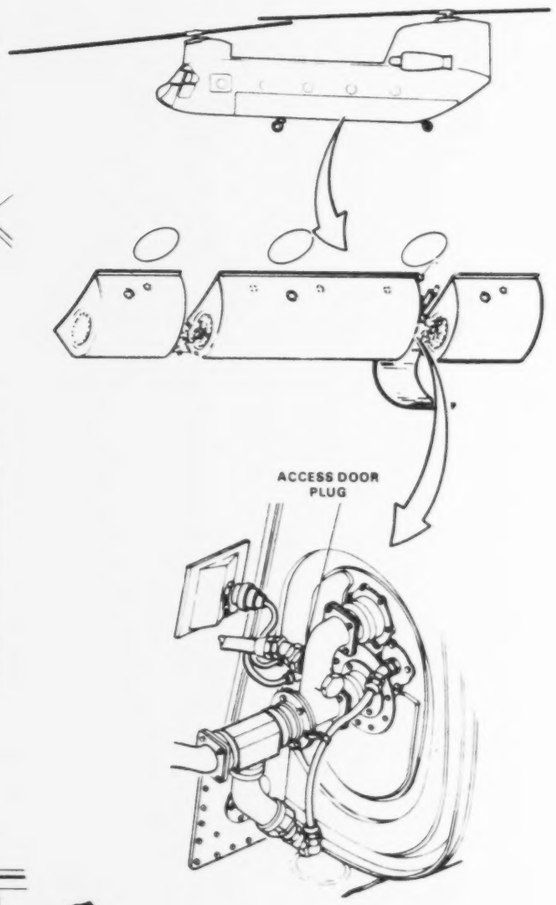












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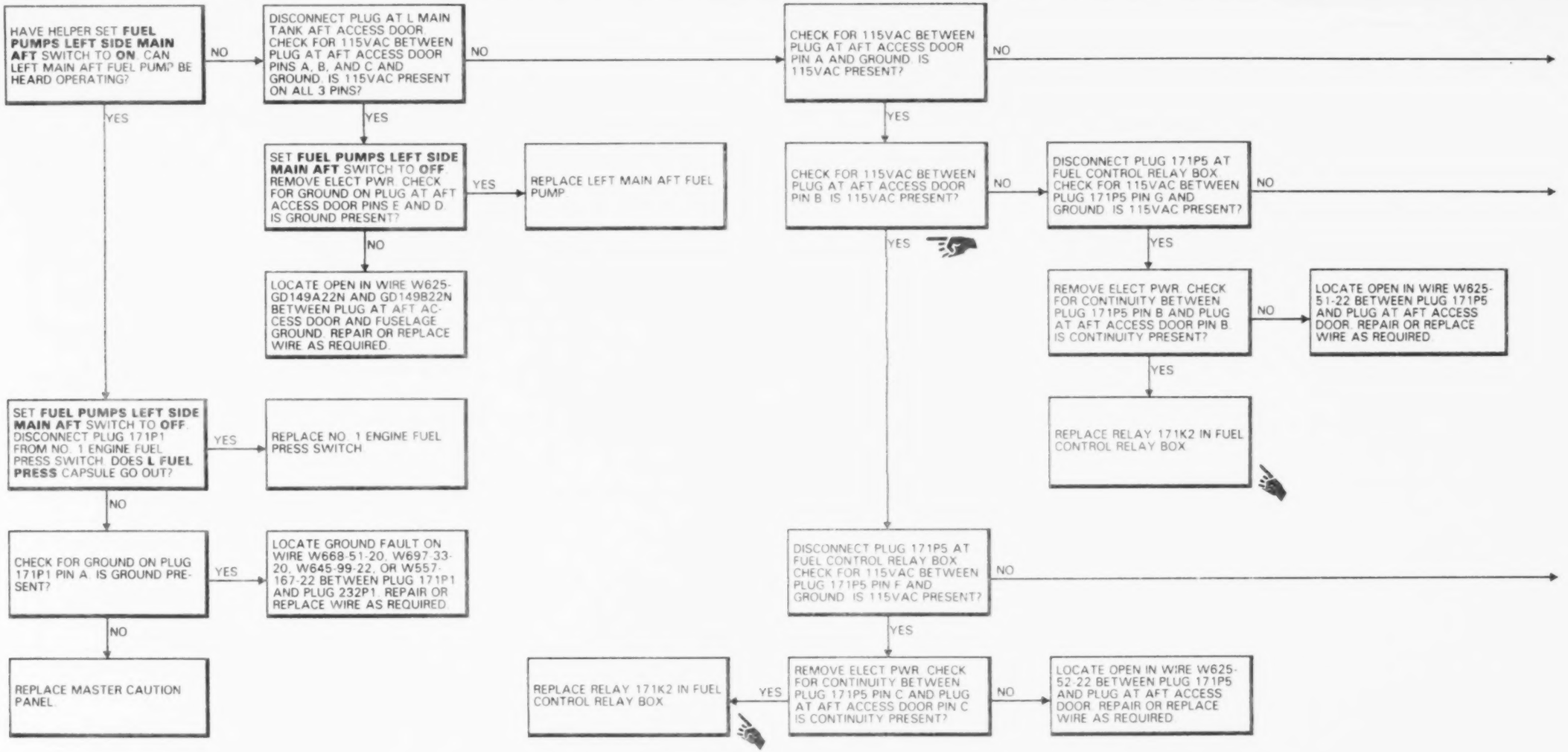
HAVE HELPER SET FUEL PUMPS LEFT SIDE MAIN AFT SWITCH TO ON. CAN LEFT MAIN AFT FUEL PUMP BE HEARD OPERATING?
NO
DISCONNECT PLUG AT L MAIN TANK AFT ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PIN A AND GROUND. IS 115VAC PRESENT?
NO
YES
YES
YES
SET FUEL PUMPS LEFT SIDE MAIN AFT SWITCH TO OFF. REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG AT AFT ACCESS DOOR PINS E AND D. IS GROUND PRESENT?
YES
REPLACE LEFT MAIN AFT FUEL PUMP
CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PIN B. IS 115VAC PRESENT?
NO
DISCONNECT PLUG 171P5 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P5 PIN G AND GROUND. IS 115VAC PRESENT?
NO
NO
YES
YES
YES
LOCATE OPEN IN WIRE W625-GD149A22N AND GD149B22N BETWEEN PLUG AT AFT ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P5 PIN B AND PLUG AT AFT ACCESS DOOR PIN B. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-51-22 BETWEEN PLUG 171P5 AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED
SET FUEL PUMPS LEFT SIDE MAIN AFT SWITCH TO OFF. DISCONNECT PLUG 171P1 FROM NO. 1 ENGINE FUEL PRESS SWITCH. DOES L FUEL PRESS CAPSULE GO OUT?
YES
REPLACE NO. 1 ENGINE FUEL PRESS SWITCH
YES
REPLACE RELAY 171K2 IN FUEL CONTROL RELAY BOX
NO
CHECK FOR GROUND ON PLUG 171P1 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W668-51-20, W697-33-20, W645-99-22, OR W557-167-22 BETWEEN PLUG 171P1 AND PLUG 232P1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 171P5 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P5 PIN F AND GROUND. IS 115VAC PRESENT?
NO
YES
REPLACE MASTER CAUTION PANEL.
REPLACE RELAY 171K2 IN FUEL CONTROL RELAY BOX
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P5 PIN C AND PLUG AT AFT ACCESS DOOR PIN C. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-52-22 BETWEEN PLUG 171P5 AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED

GO TO NEXT PAGE

10-2.22 L FUEL PRESS CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN AFT FUEL PUMPS SWITCH IS SET TO ON (Continued)

NO
DISCONNECT PLUG 171P5 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P5 PIN H AND GROUND. IS 115VAC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO 1 PDP. OPEN LH FUEL PUMPS MAIN AFT CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMPS MAIN AFT CB 171CB2 A PHASE CIRCUIT SIDE AND PLUG 171P5 PIN H. IS CONTINUITY PRESENT?
YES
REPLACE LH FUEL PUMPS MAIN AFT CB.
NO
LOCATE OPEN IN WIRE W625-54-22A, W645-93-20A, OR, W550-40-20A BETWEEN PLUG 171P5 AND CB 171CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO 1 PDP. OPEN LH FUEL PUMPS MAIN AFT CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMPS MAIN AFT CB 171CB2 B PHASE CIRCUIT SIDE AND PLUG 171P5 PIN G. IS CONTINUITY PRESENT?
YES
REPLACE LH FUEL PUMPS MAIN AFT CB.
NO
LOCATE OPEN IN WIRE W625-55-22B, W645-94-20B, OR, W550-41-20B BETWEEN PLUG 171P5 AND CB 171CB2. REPAIR OR REPLACE WIRES AS REQUIRED.
CHECK FOR 28VDC BETWEEN PLUG 171P5 PIN E (+) AND GROUND. IS 28VDC PRESENT?
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN FUEL PUMPS LEFT SIDE MAIN AFT SWITCH TERM 3(+) AND GROUND. IS 28VDC PRESENT?
NO
CHECK FOR 28VDC BETWEEN FUEL PUMP LEFT SIDE MAIN AFT SWITCH TERM 2(+) AND GROUND. IS 28VDC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO 1 PDP. OPEN LH FUEL PUMP CONT MAIN AFT CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMP CONT MAIN AFT CB 171CB6 AND MAIN AFT SW TERM 2. IS CONTINUITY PRESENT?
YES
REPLACE LH FUEL PUMP CONT MAIN AFT CB.
NO
LOCATE OPEN IN WIRE W559-129-20, W645-89-20, OR, W550-38-20 BETWEEN LEFT SIDE MAIN AFT SWITCH AND CB 171CB6. REPAIR OR REPLACE WIRES AS REQUIRED.
YES
LOCATE OPEN IN WIRE W625-53-22, W645-91-20, OR, W559-126-20 BETWEEN PLUG 171P5 AND LEFT SIDE MAIN AFT SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED.
YES
REPLACE FUEL PUMPS LEFT SIDE MAIN AFT SWITCH.
YES
CHECK FOR GROUND ON PLUG 171P5 PIN D. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W625-GD175D22N BETWEEN PLUG 171P5 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO 1 PDP. OPEN LH FUEL PUMPS MAIN AFT CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMPS MAIN AFT CB 171CB2 C PHASE CIRCUIT SIDE AND PLUG 171P5 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE LH FUEL PUMPS MAIN AFT CB.
NO
LOCATE OPEN IN WIRE W625-56-22C, W645-95-20C, OR, W550-42-20C BETWEEN PLUG 171P5 AND CB 171CB2. REPAIR OR REPLACE WIRES AS REQUIRED.
YES
REPLACE RELAY 171K2 IN FUEL CONTROL RELAY BOX.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 171P5 PIN A AND PLUG AT AFT ACCESS DOOR PIN A. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-50-22 BETWEEN PLUG 171P5 AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.

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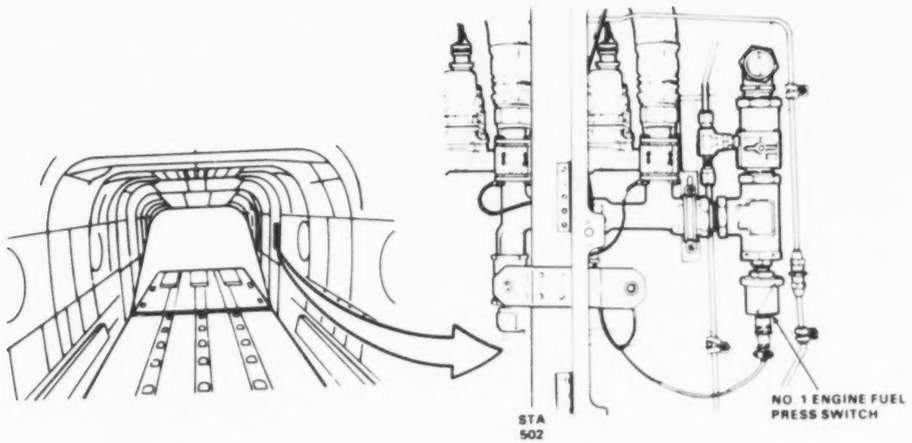
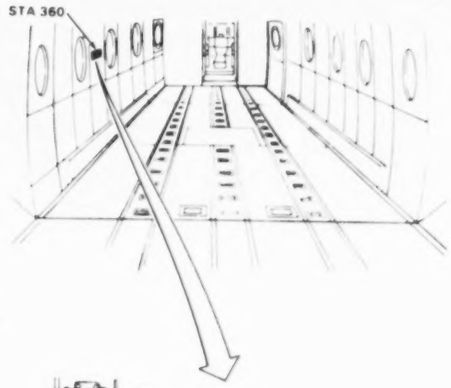
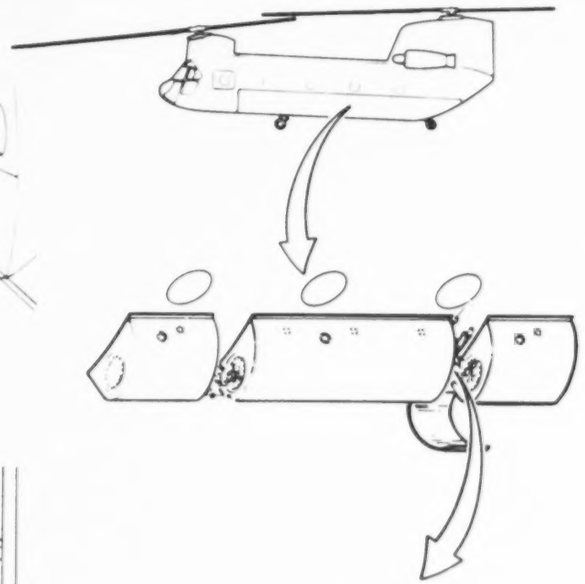
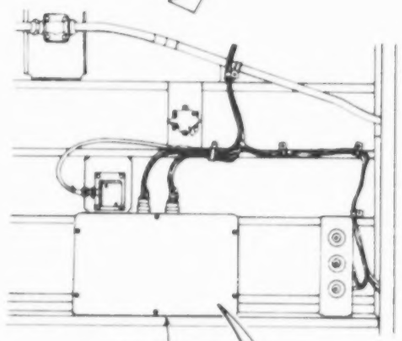
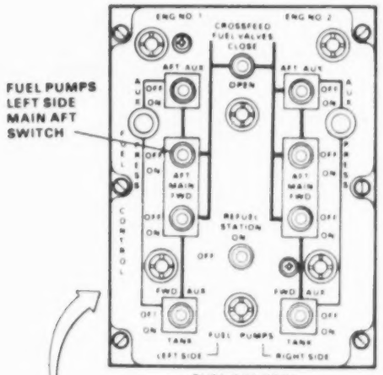
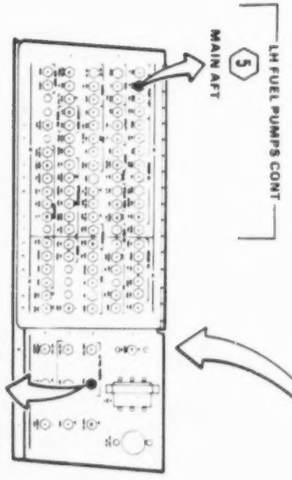


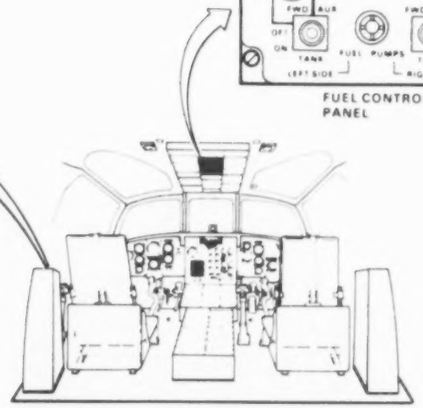


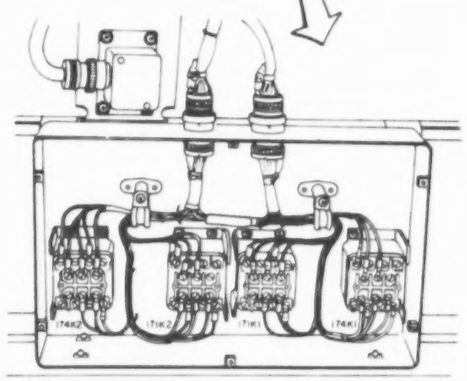


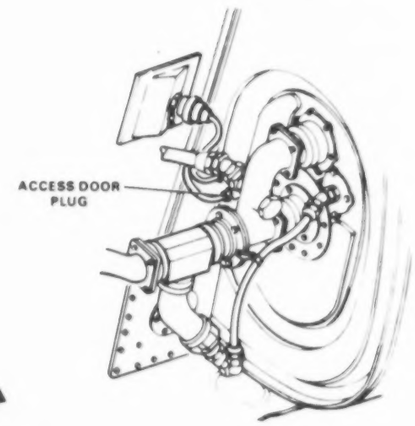












NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS

9630

END OF TASK

10-2.23 L FUEL PRESS CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN FWD FUEL PUMPS SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

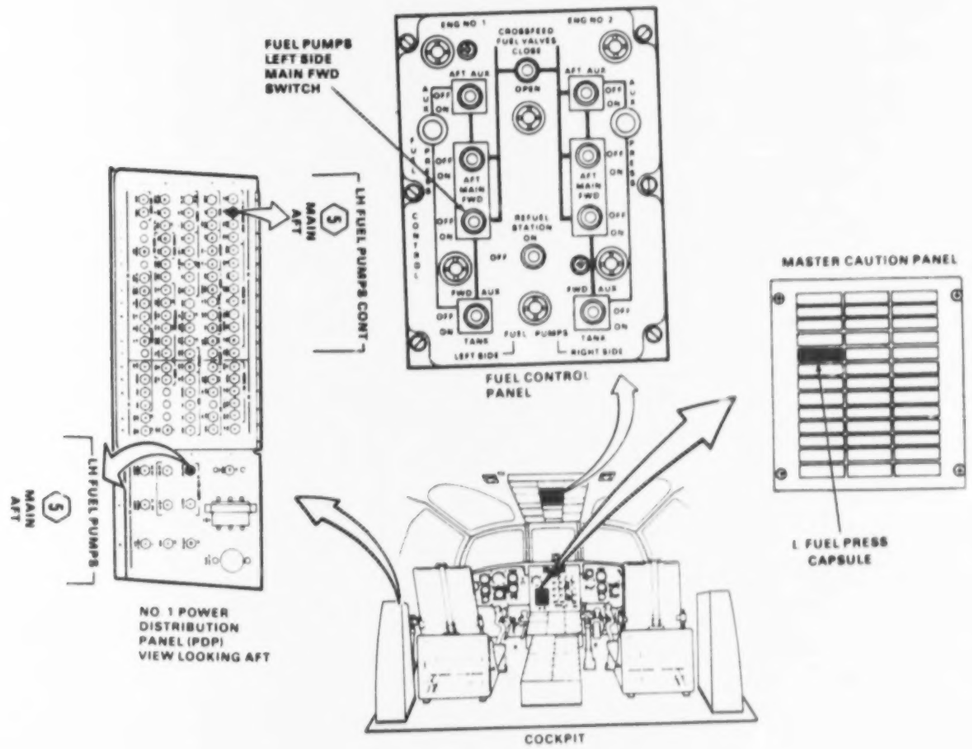
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

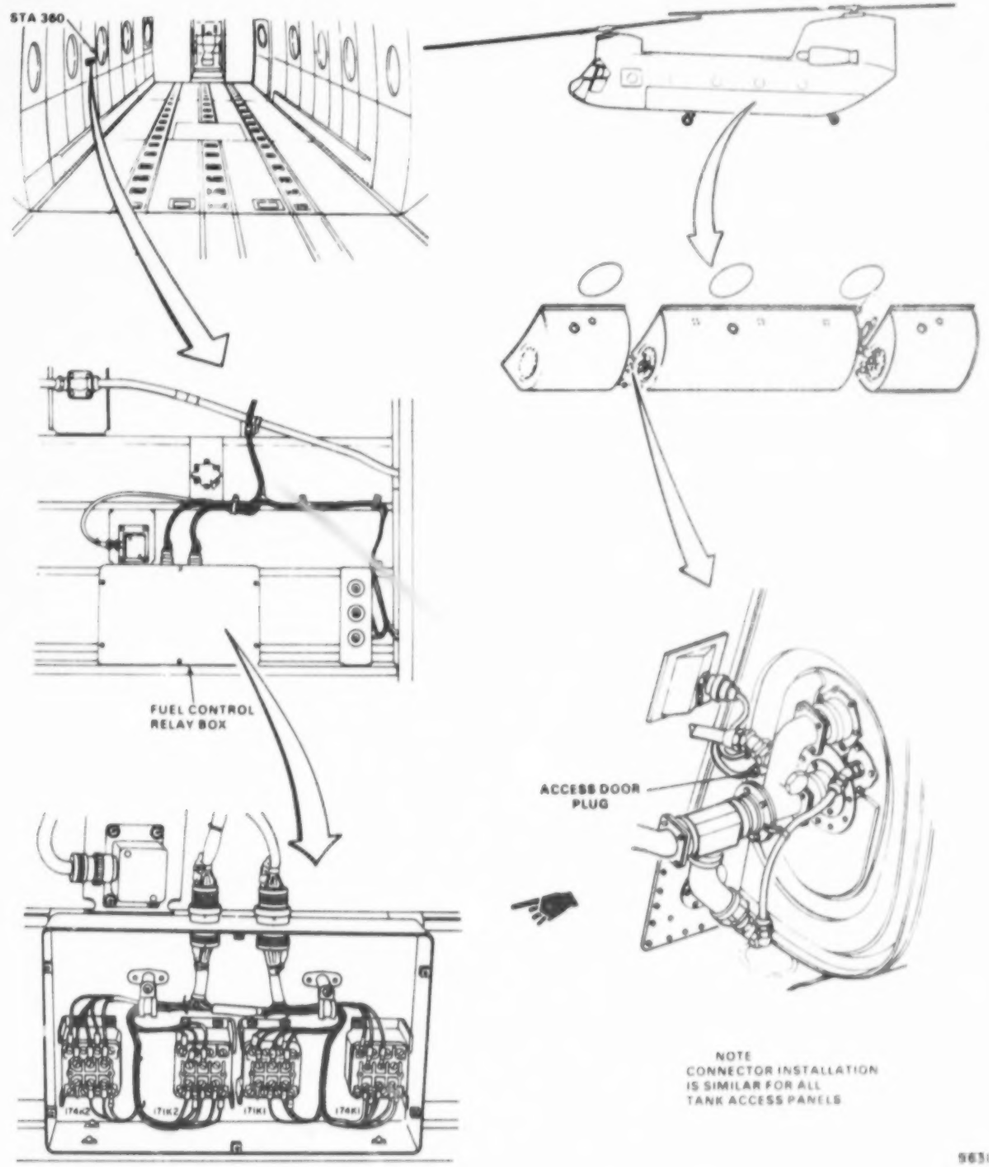
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23
TM 55-1520-240-10

Equipment Condition:
TM 55-1520-240-10
Both Engines Shut Down
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Fwd Landing Gear Access Panel Open





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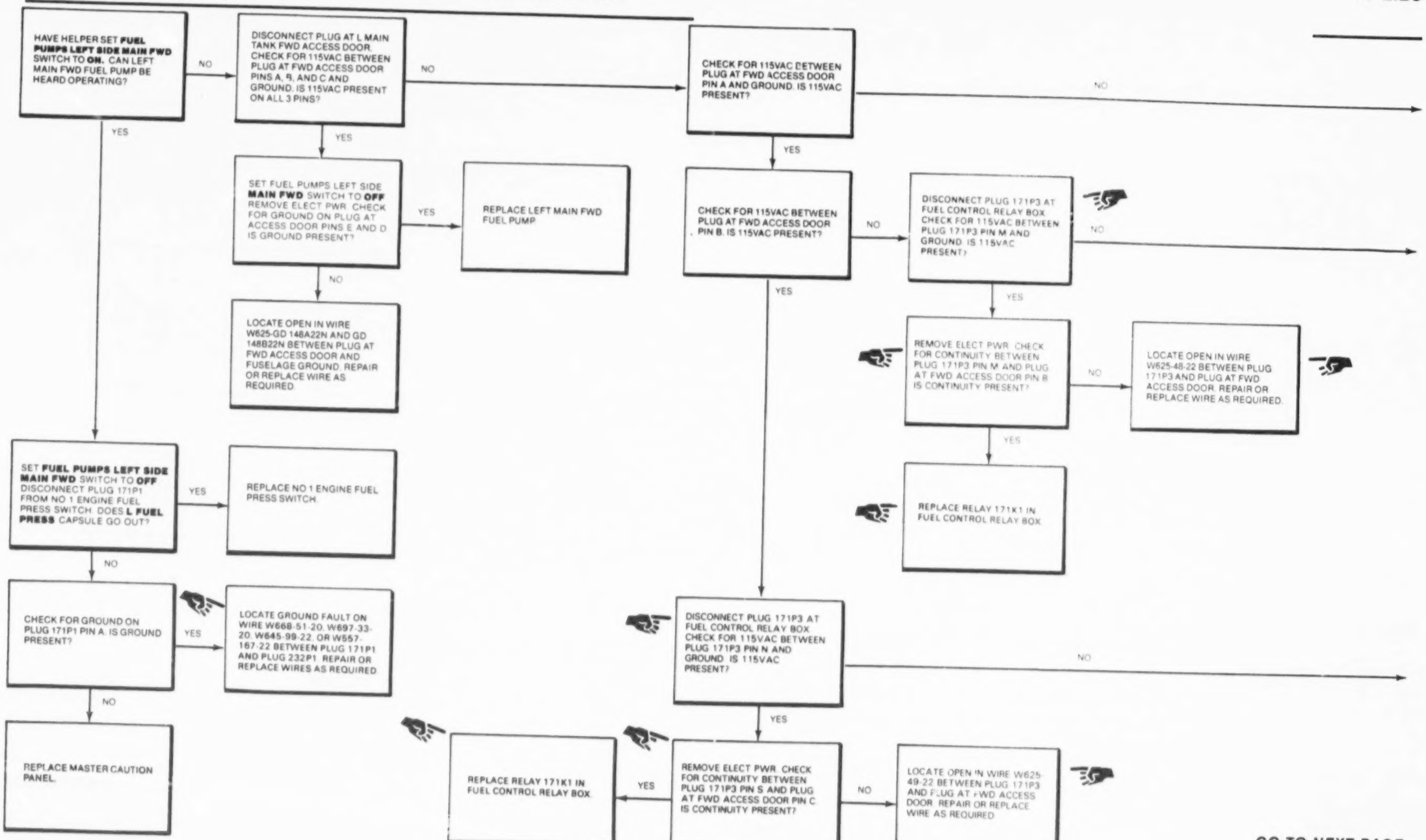
10-2.23 L FUEL PRESS CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN FWD FUEL PUMPS SWITCH IS SET TO ON (Continued)


HAVE HELPER SET FUEL PUMPS LEFT SIDE MAIN FWD SWITCH TO ON. CAN LEFT MAIN FWD FUEL PUMP BE HEARD OPERATING?
NO
YES
DISCONNECT PLUG AT L MAIN TANK FWD ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
YES
SET FUEL PUMPS LEFT SIDE MAIN FWD SWITCH TO OFF REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG AT ACCESS DOOR PINS E AND D IS GROUND PRESENT?
YES
REPLACE LEFT MAIN FWD FUEL PUMP
NO
LOCATE OPEN IN WIRE W625-GD 148A22N AND GD 148B22N BETWEEN PLUG AT FWD ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PIN A AND GROUND. IS 115VAC PRESENT?
NO
YES
CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PIN B. IS 115VAC PRESENT?
NO
DISCONNECT PLUG 171P3 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P3 PIN M AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P3 PIN M AND PLUG AT FWD ACCESS DOOR PIN B IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-48-22 BETWEEN PLUG 171P3 AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RELAY 171K1 IN FUEL CONTROL RELAY BOX
YES
SET FUEL PUMPS LEFT SIDE MAIN FWD SWITCH TO OFF DISCONNECT PLUG 171P1 FROM NO 1 ENGINE FUEL PRESS SWITCH. DOES L FUEL PRESS CAPSULE GO OUT?
YES
REPLACE NO 1 ENGINE FUEL PRESS SWITCH.
NO
CHECK FOR GROUND ON PLUG 171P1 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W668-51-20, W697-33-20, W645-99-22, OR W557-167-22 BETWEEN PLUG 171P1 AND PLUG 232P1. REPAIR OR REPLACE WIRES AS REQUIRED
NO
REPLACE MASTER CAUTION PANEL.
DISCONNECT PLUG 171P3 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P3 PIN N AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P3 PIN S AND PLUG AT FWD ACCESS DOOR PIN C. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-49-22 BETWEEN PLUG 171P3 AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED
YES
REPLACE RELAY 171K1 IN FUEL CONTROL RELAY BOX

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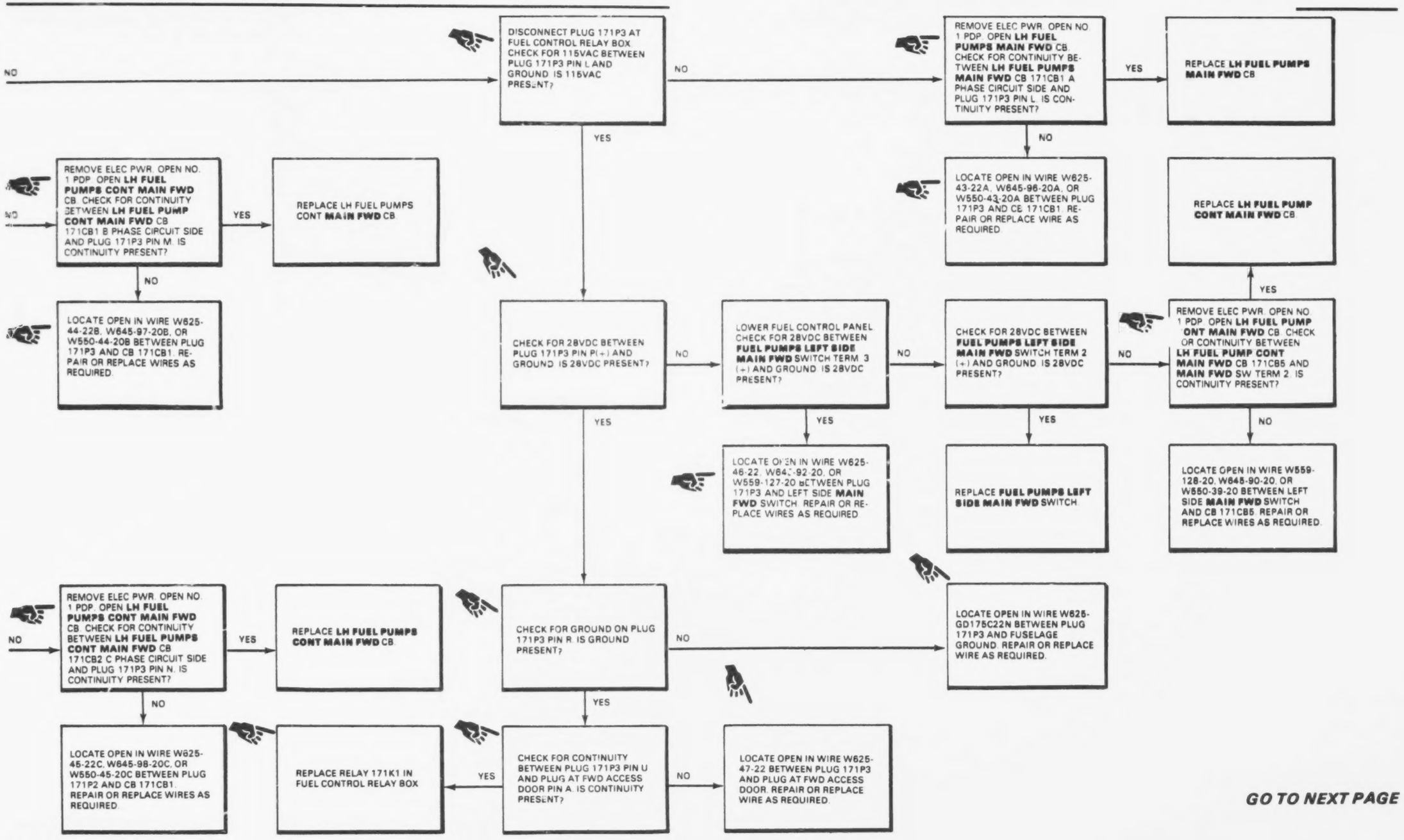
10-2.23 L FUEL PRESS WARNING CAPSULE DOES NOT GO OUT WHEN LEFT SIDE MAIN FWD FUEL PUMP SWITCH IS SET TO ON (Continued)


DISCONNECT PLUG 171P3 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P3 PIN L AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMPS MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMPS MAIN FWD CB 171CB1 A PHASE CIRCUIT SIDE AND PLUG 171P3 PIN L. IS CONTINUITY PRESENT?
YES
REPLACE LH FUEL PUMPS MAIN FWD CB.
NO
LOCATE OPEN IN WIRE W625-43-22A, W645-96-20A, OR W550-43-20A BETWEEN PLUG 171P3 AND CB 171CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMPS CONT MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMP CONT MAIN FWD CB 171CB1 B PHASE CIRCUIT SIDE AND PLUG 171P3 PIN M. IS CONTINUITY PRESENT?
YES
REPLACE LH FUEL PUMPS CONT MAIN FWD CB.
NO
LOCATE OPEN IN WIRE W625-44-22B, W645-97-20B, OR W550-44-20B BETWEEN PLUG 171P3 AND CB 171CB1. REPAIR OR REPLACE WIRES AS REQUIRED.
REPLACE LH FUEL PUMP CONT MAIN FWD CB.
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMP CONT MAIN FWD CB. CHECK OR CONTINUITY BETWEEN LH FUEL PUMP CONT MAIN FWD CB 171CB5 AND MAIN FWD SW TERM 2. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W559-128-20, W645-90-20, OR W550-39-20 BETWEEN LEFT SIDE MAIN FWD SWITCH AND CB 171CB5. REPAIR OR REPLACE WIRES AS REQUIRED.
CHECK FOR 28VDC BETWEEN PLUG 171P3 PIN P(+) AND GROUND. IS 28VDC PRESENT?
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN FUEL PUMPS LEFT SIDE MAIN FWD SWITCH TERM. 3 (+) AND GROUND. IS 28VDC PRESENT?
NO
CHECK FOR 28VDC BETWEEN FUEL PUMPS LEFT SIDE MAIN FWD SWITCH TERM 2 (+) AND GROUND. IS 28VDC PRESENT?
NO
YES
LOCATE OPEN IN WIRE W625-46-22, W645-92-20, OR W559-127-20 BETWEEN PLUG 171P3 AND LEFT SIDE MAIN FWD SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED.
REPLACE FUEL PUMPS LEFT SIDE MAIN FWD SWITCH.
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMPS CONT MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMP CONT MAIN FWD CB 171CB2 C PHASE CIRCUIT SIDE AND PLUG 171P3 PIN N. IS CONTINUITY PRESENT?
NO
YES
REPLACE LH FUEL PUMPS CONT MAIN FWD CB.
NO
LOCATE OPEN IN WIRE W625-45-22C, W645-98-20C, OR W550-45-20C BETWEEN PLUG 171P2 AND CB 171CB1. REPAIR OR REPLACE WIRES AS REQUIRED.
REPLACE RELAY 171K1 IN FUEL CONTROL RELAY BOX.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 171P3 PIN U AND PLUG AT FWD ACCESS DOOR PIN A. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-47-22 BETWEEN PLUG 171P3 AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 171P3 PIN R. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W625-GD175C22N BETWEEN PLUG 171P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES

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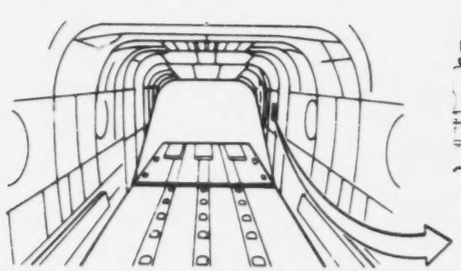

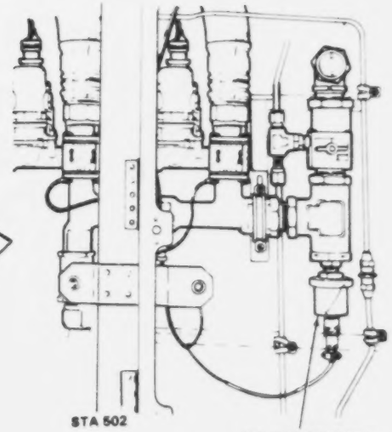

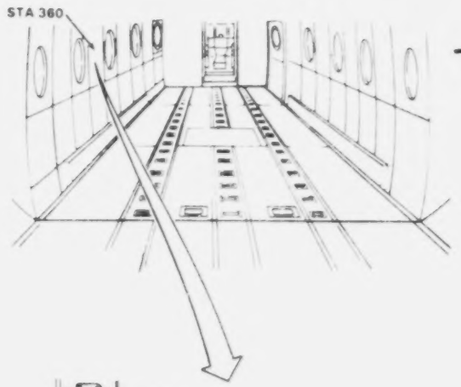

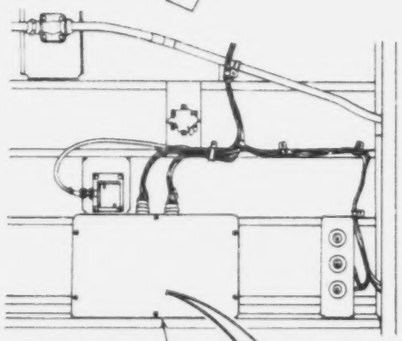

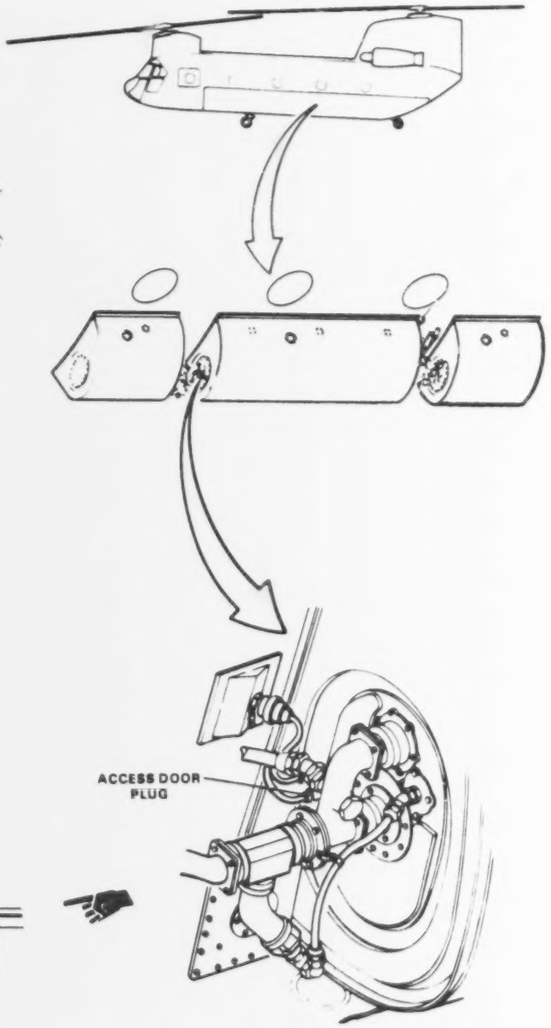

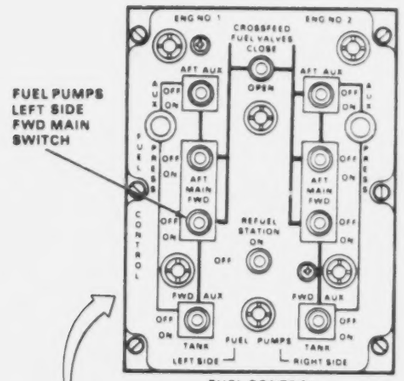

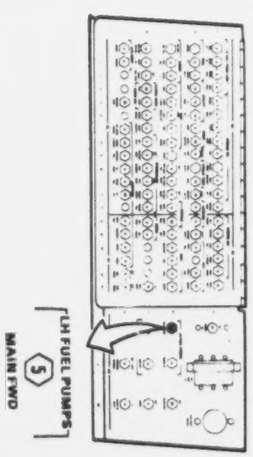

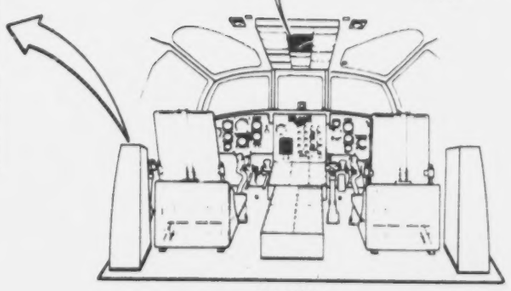

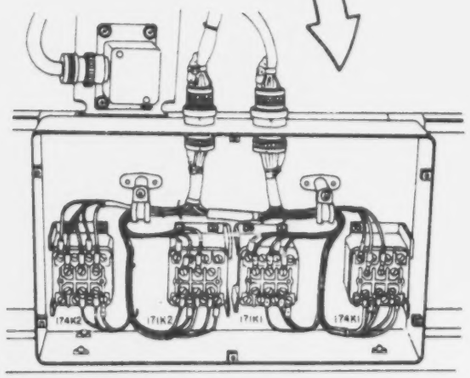

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END OF TASK

10-2.24 R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN FWD FUEL PUMPS SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

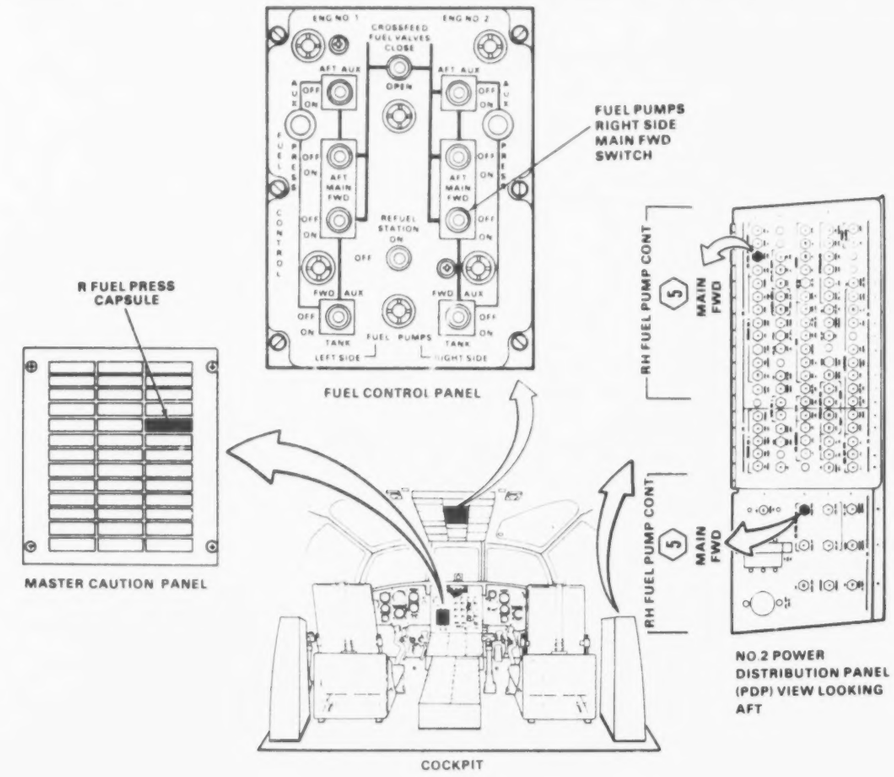
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

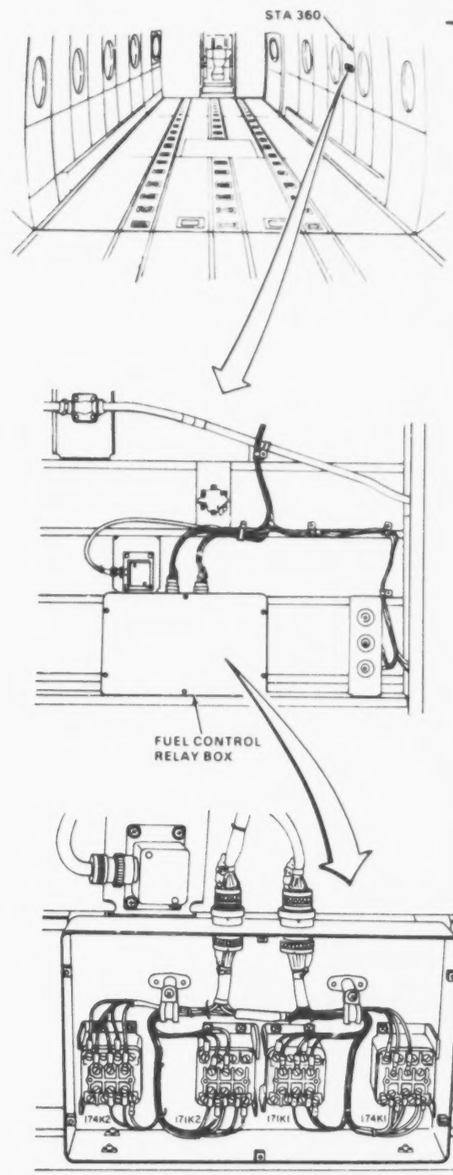
Materials:
None

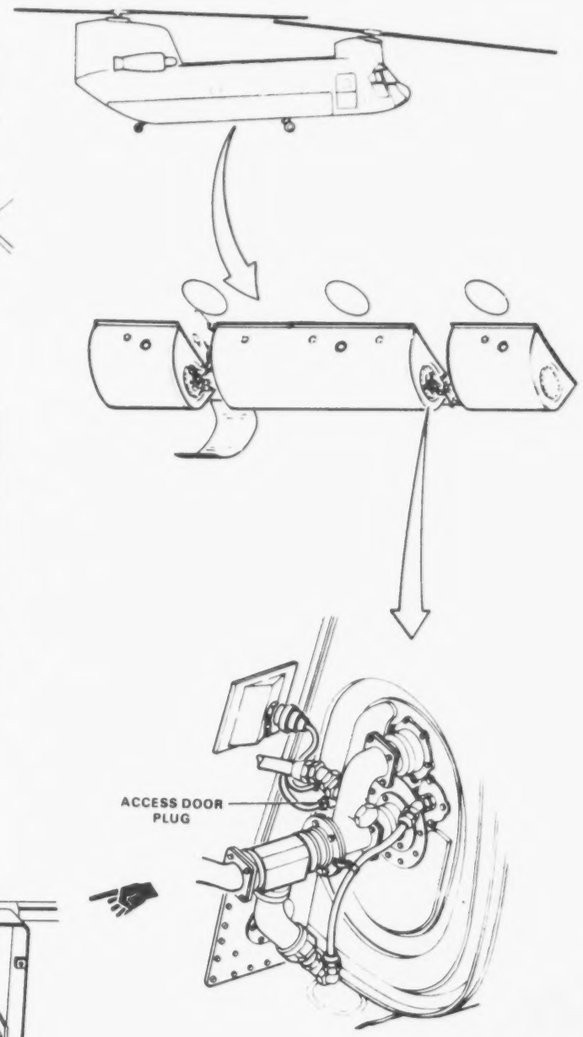
Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23
TM 55-1520-240-10

Equipment Condition:
TM 55-1520-240-10
Both Engines Shut Down
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Fwd Landing Gear Access Panel Open







9633

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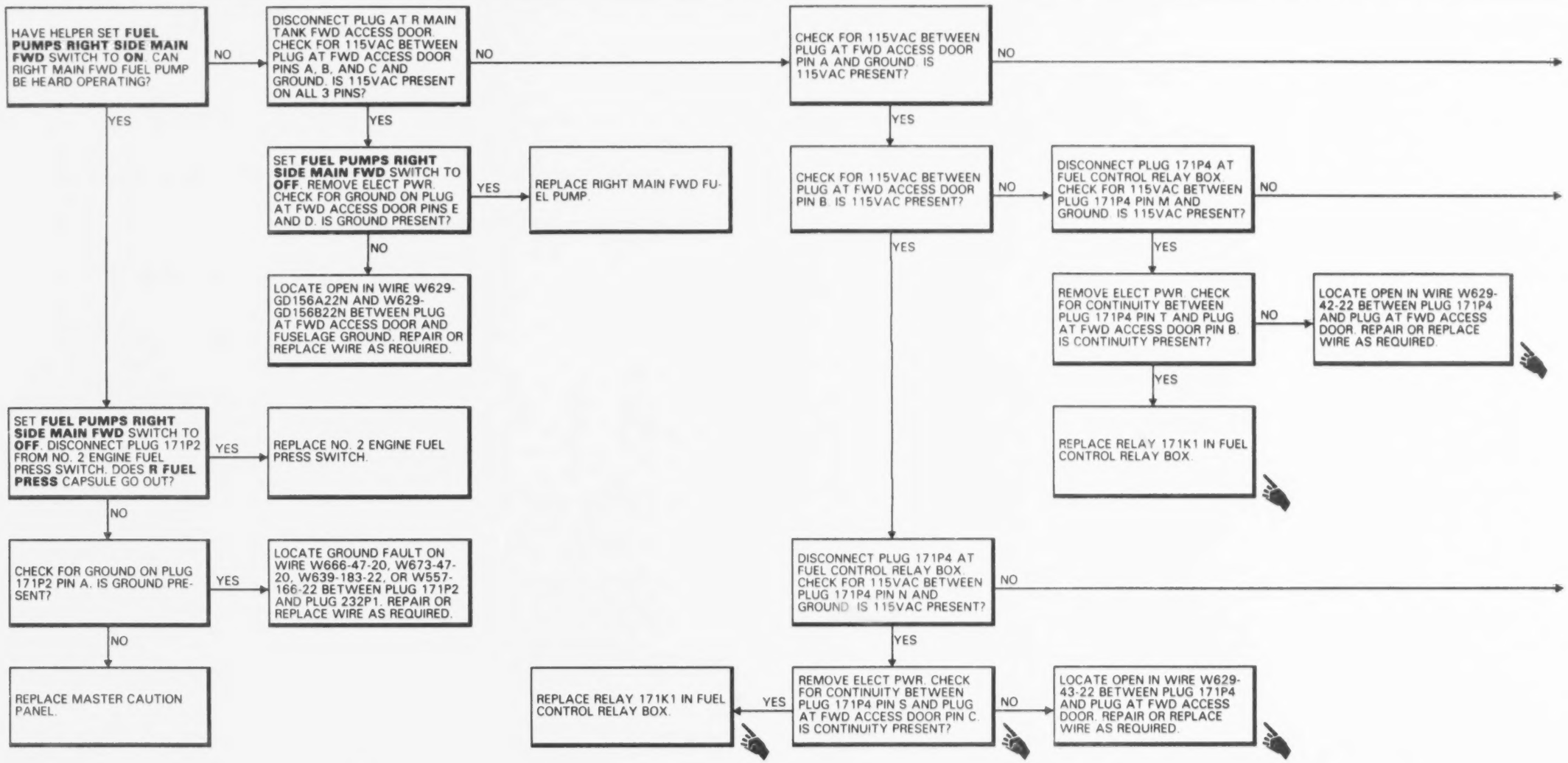
10-2.24 R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN FWD FUEL PUMPS SWITCH IS SET TO ON (Continued)


HAVE HELPER SET FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH TO ON. CAN RIGHT MAIN FWD FUEL PUMP BE HEARD OPERATING?
NO
YES
DISCONNECT PLUG AT R MAIN TANK FWD ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
YES
SET FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH TO OFF. REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PINS E AND D. IS GROUND PRESENT?
YES
REPLACE RIGHT MAIN FWD FUEL PUMP.
NO
LOCATE OPEN IN WIRE W629-GD156A22N AND W629-GD156B22N BETWEEN PLUG AT FWD ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
SET FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH TO OFF. DISCONNECT PLUG 171P2 FROM NO. 2 ENGINE FUEL PRESS SWITCH. DOES R FUEL PRESS CAPSULE GO OUT?
YES
REPLACE NO. 2 ENGINE FUEL PRESS SWITCH.
NO
CHECK FOR GROUND ON PLUG 171P2 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-47-20, W673-47-20, W639-183-22, OR W557-166-22 BETWEEN PLUG 171P2 AND PLUG 232P1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE MASTER CAUTION PANEL.
CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PIN A AND GROUND. IS 115VAC PRESENT?
NO
YES
CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PIN B. IS 115VAC PRESENT?
NO
YES
DISCONNECT PLUG 171P4 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P4 PIN M AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P4 PIN T AND PLUG AT FWD ACCESS DOOR PIN B. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-42-22 BETWEEN PLUG 171P4 AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RELAY 171K1 IN FUEL CONTROL RELAY BOX.
DISCONNECT PLUG 171P4 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P4 PIN N AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P4 PIN S AND PLUG AT FWD ACCESS DOOR PIN C. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-43-22 BETWEEN PLUG 171P4 AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RELAY 171K1 IN FUEL CONTROL RELAY BOX.

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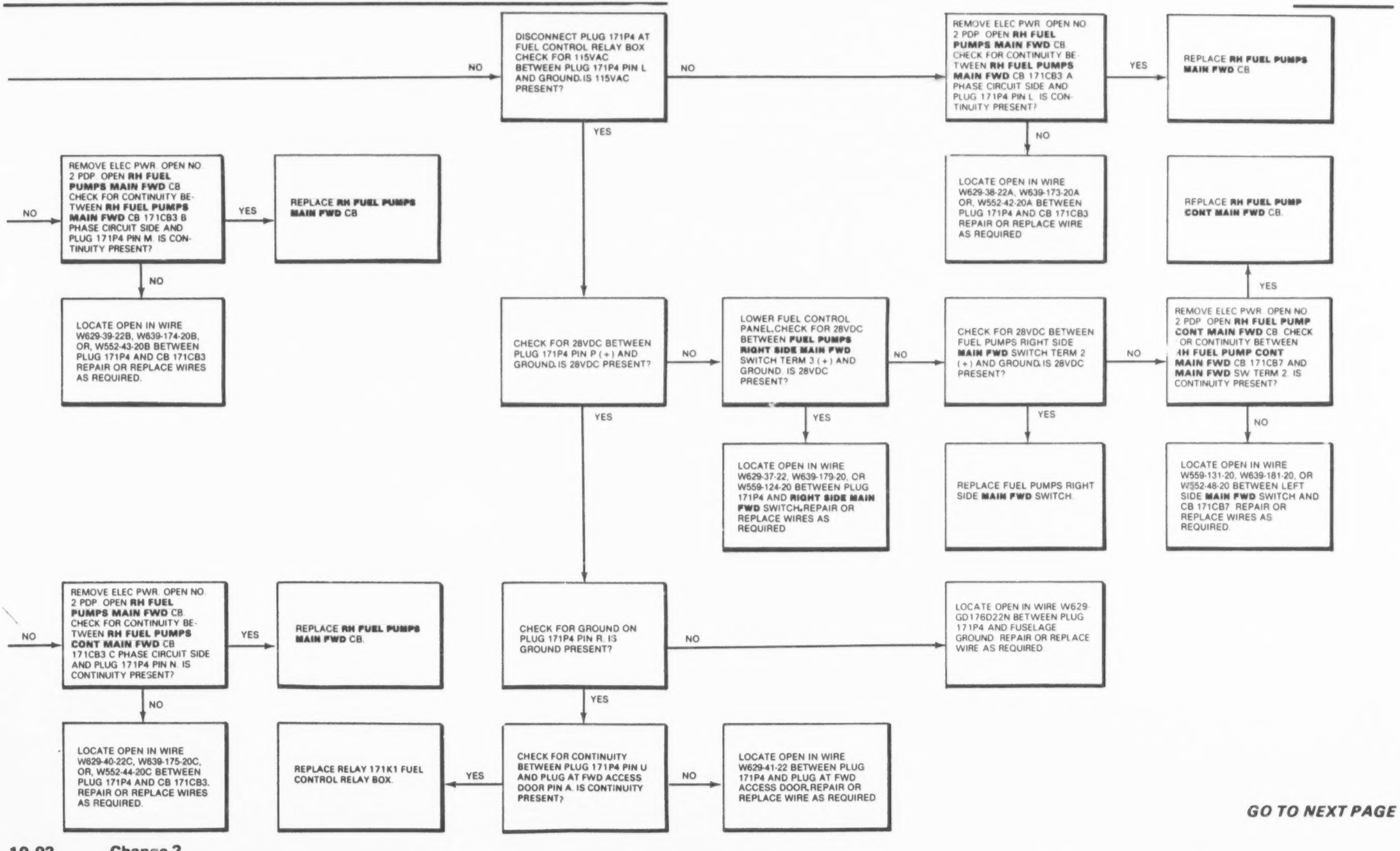
10-2.24 R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN FWD FUEL PUMP SWITCH IS SET TO ON (Continued) 1


NO
DISCONNECT PLUG 171P4 AT FUEL CONTROL RELAY BOX CHECK FOR 115VAC BETWEEN PLUG 171P4 PIN L AND GROUND. IS 115VAC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN RH FUEL PUMPS MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN RH FUEL PUMPS MAIN FWD CB 171CB3 A PHASE CIRCUIT SIDE AND PLUG 171P4 PIN L. IS CONTINUITY PRESENT?
YES
REPLACE RH FUEL PUMPS MAIN FWD CB
NO
LOCATE OPEN IN WIRE W629-38-22A, W639-173-20A OR, W552-42-20A BETWEEN PLUG 171P4 AND CB 171CB3 REPAIR OR REPLACE WIRE AS REQUIRED
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN RH FUEL PUMPS MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN RH FUEL PUMPS MAIN FWD CB 171CB3 B PHASE CIRCUIT SIDE AND PLUG 171P4 PIN M. IS CONTINUITY PRESENT?
YES
REPLACE RH FUEL PUMPS MAIN FWD CB
NO
LOCATE OPEN IN WIRE W629-39-22B, W639-174-20B, OR, W552-43-20B BETWEEN PLUG 171P4 AND CB 171CB3 REPAIR OR REPLACE WIRES AS REQUIRED.
CHECK FOR 28VDC BETWEEN PLUG 171P4 PIN P (+) AND GROUND. IS 28VDC PRESENT?
NO
LOWER FUEL CONTROL PANEL, CHECK FOR 28VDC BETWEEN FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH TERM 3 (+) AND GROUND. IS 28VDC PRESENT?
NO
CHECK FOR 28VDC BETWEEN FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH TERM 2 (+) AND GROUND. IS 28VDC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN RH FUEL PUMP CONT MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN RH FUEL PUMP CONT MAIN FWD CB 171CB7 AND MAIN FWD SW TERM 2. IS CONTINUITY PRESENT?
YES
REPLACE RH FUEL PUMP CONT MAIN FWD CB.
YES
LOCATE OPEN IN WIRE W629-37-22, W639-179-20, OR W559-124-20 BETWEEN PLUG 171P4 AND RIGHT SIDE MAIN FWD SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED
YES
REPLACE FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH.
NO
LOCATE OPEN IN WIRE W559-131-20, W639-181-20, OR W552-48-20 BETWEEN LEFT SIDE MAIN FWD SWITCH AND CB 171CB7. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN RH FUEL PUMPS MAIN FWD CB. CHECK FOR CONTINUITY BETWEEN RH FUEL PUMPS MAIN FWD CB 171CB3 C PHASE CIRCUIT SIDE AND PLUG 171P4 PIN N. IS CONTINUITY PRESENT?
YES
REPLACE RH FUEL PUMPS MAIN FWD CB.
NO
LOCATE OPEN IN WIRE W629-40-22C, W639-175-20C, OR, W552-44-20C BETWEEN PLUG 171P4 AND CB 171CB3. REPAIR OR REPLACE WIRES AS REQUIRED.
CHECK FOR GROUND ON PLUG 171P4 PIN R. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W629-GD176D22N BETWEEN PLUG 171P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RELAY 171K1 FUEL CONTROL RELAY BOX.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 171P4 PIN U AND PLUG AT FWD ACCESS DOOR PIN A. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-41-22 BETWEEN PLUG 171P4 AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED

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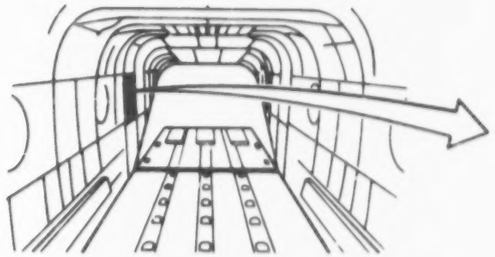
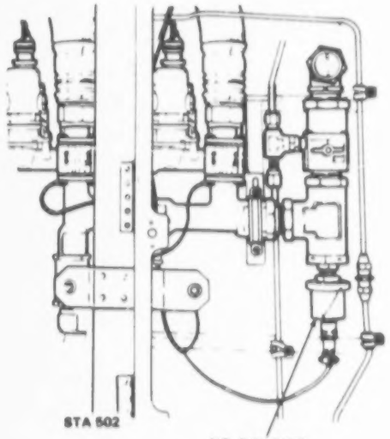
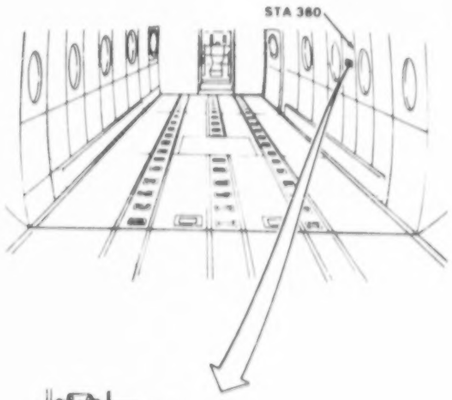
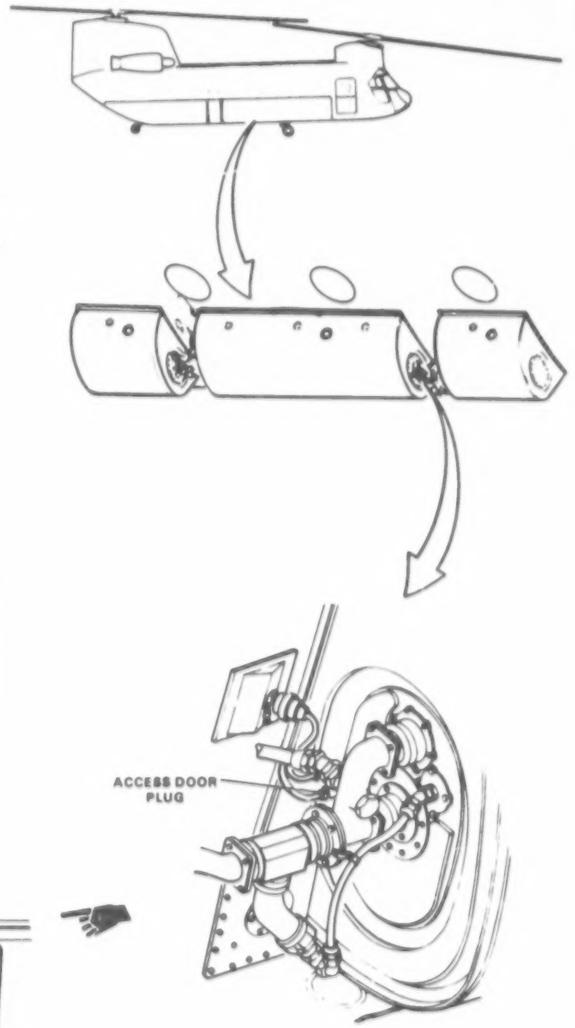
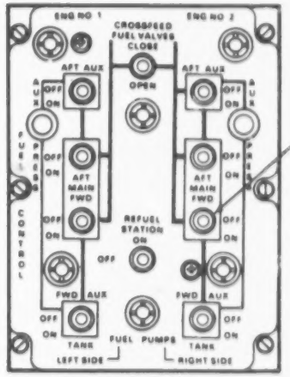




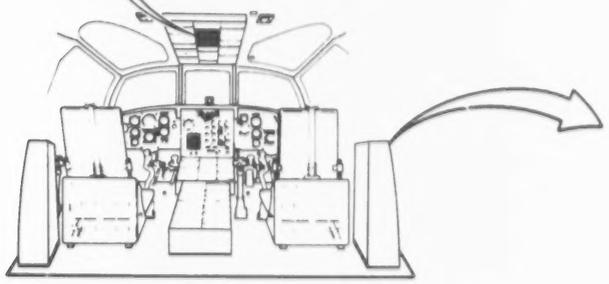




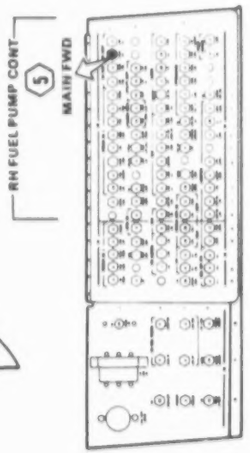


FUEL PUMPS RIGHT SIDE MAIN FWD SWITCH

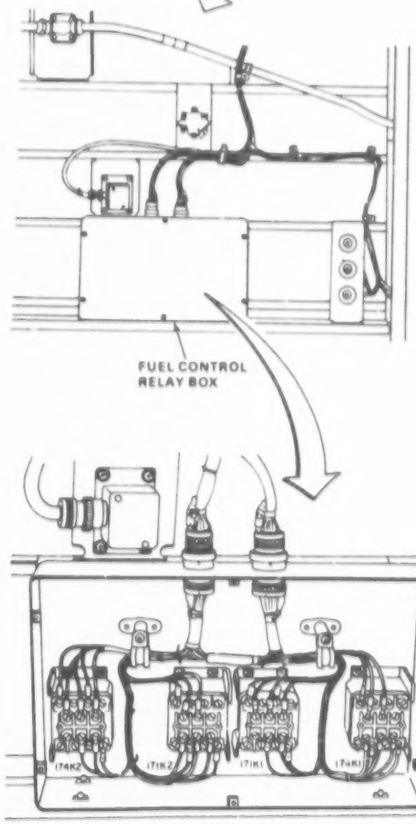
FUEL CONTROL PANEL



COCKPIT



NO.2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



FUEL CONTROL RELAY BOX

NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.

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END OF TASK

10-2.25 R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN AFT FUEL PUMPS SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

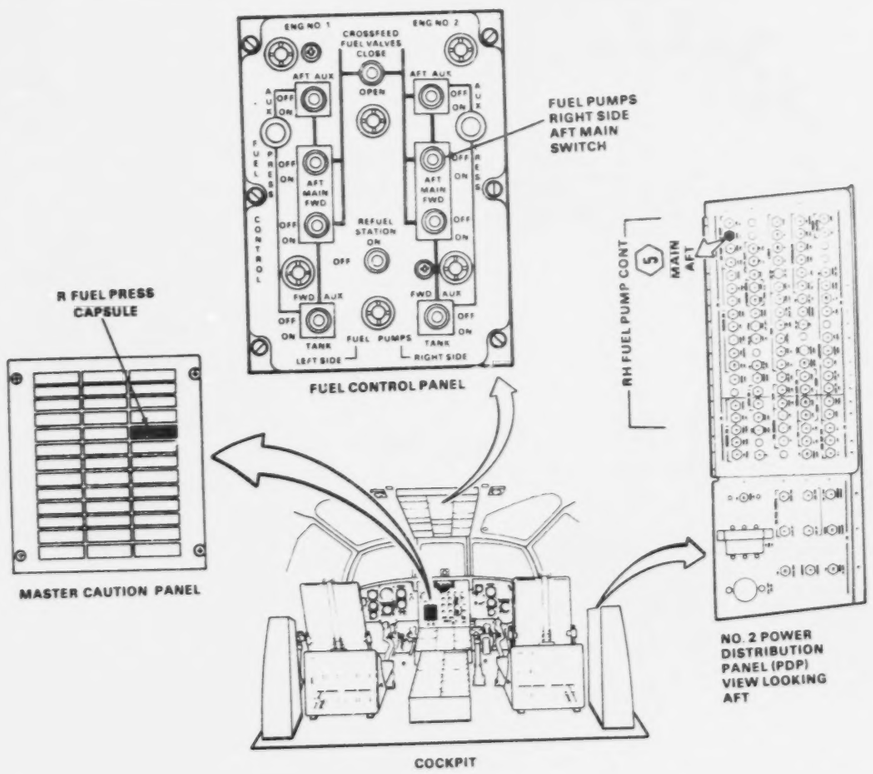
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

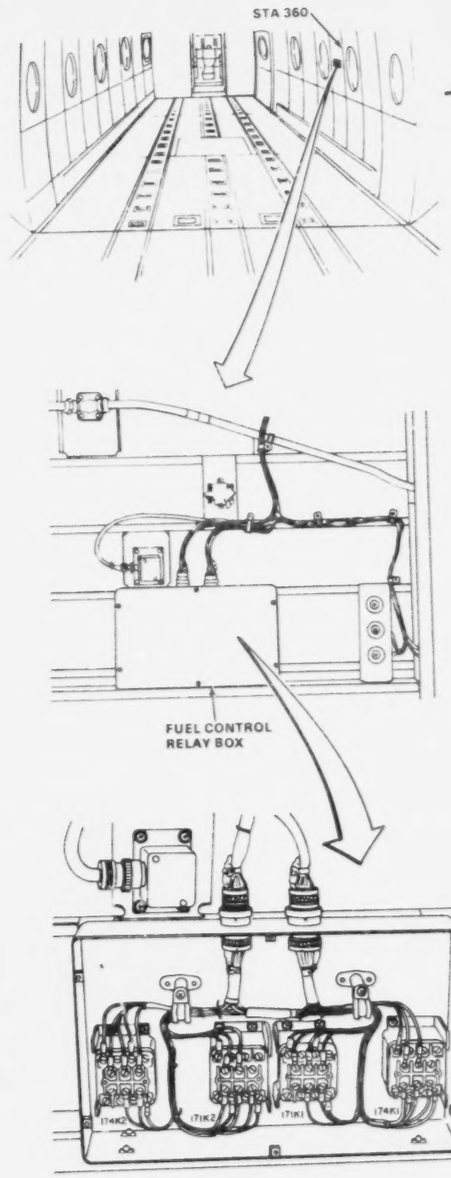
Materials:
None

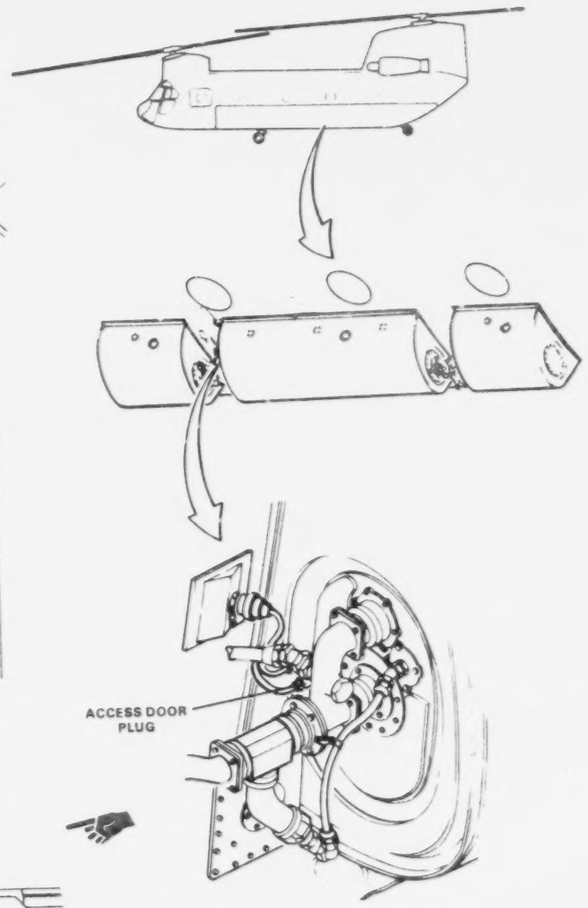
Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23
TM 55-1520-240-10

Equipment Condition:
TM 55-1520-240-10
Both Engines Shut Down
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Side Intertank Access Panel Open







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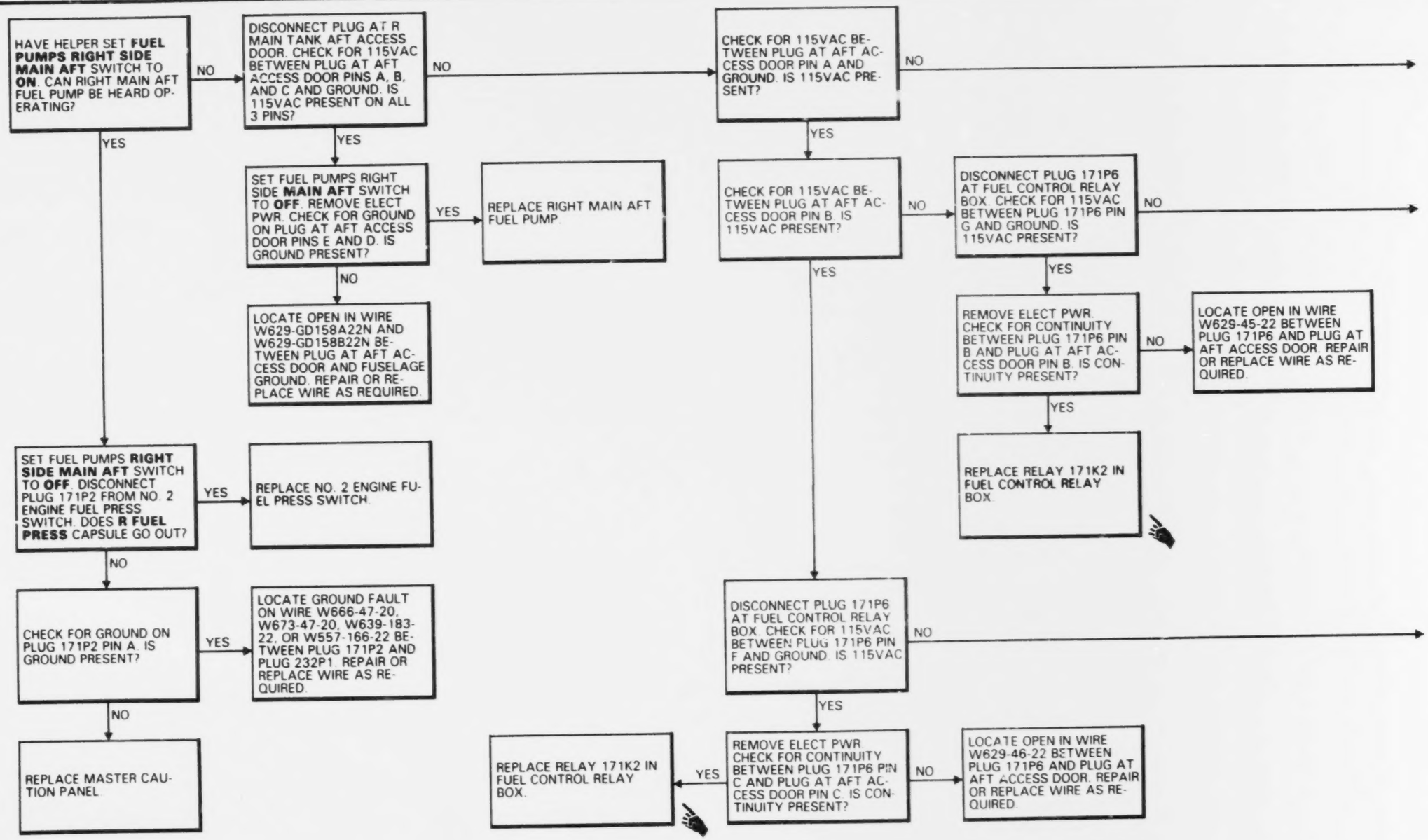
10-2.25 R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN AFT FUEL PUMPS SWITCH IS SET TO ON (Continued)


HAVE HELPER SET **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH TO **ON**. CAN RIGHT MAIN AFT FUEL PUMP BE HEARD OPERATING?
NO
YES
DISCONNECT PLUG AT R MAIN TANK AFT ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
YES
SET FUEL PUMPS RIGHT SIDE **MAIN AFT** SWITCH TO **OFF**. REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG AT AFT ACCESS DOOR PINS E AND D. IS GROUND PRESENT?
YES
REPLACE RIGHT MAIN AFT FUEL PUMP.
NO
LOCATE OPEN IN WIRE W629-GD158A22N AND W629-GD158B22N BETWEEN PLUG AT AFT ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
SET FUEL PUMPS **RIGHT SIDE MAIN AFT** SWITCH TO **OFF**. DISCONNECT PLUG 171P2 FROM NO. 2 ENGINE FUEL PRESS SWITCH. DOES **R FUEL PRESS** CAPSULE GO OUT?
YES
REPLACE NO. 2 ENGINE FUEL PRESS SWITCH.
NO
CHECK FOR GROUND ON PLUG 171P2 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-47-20, W673-47-20, W639-183-22, OR W557-166-22 BETWEEN PLUG 171P2 AND PLUG 232P1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE MASTER CAUTION PANEL.
CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PIN A AND GROUND. IS 115VAC PRESENT?
NO
YES
CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PIN B. IS 115VAC PRESENT?
NO
YES
DISCONNECT PLUG 171P6 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P6 PIN G AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P6 PIN B AND PLUG AT AFT ACCESS DOOR PIN B. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-45-22 BETWEEN PLUG 171P6 AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RELAY 171K2 IN FUEL CONTROL RELAY BOX.
DISCONNECT PLUG 171P6 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P6 PIN F AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELECT PWR. CHECK FOR CONTINUITY BETWEEN PLUG 171P6 PIN C AND PLUG AT AFT ACCESS DOOR PIN C. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-46-22 BETWEEN PLUG 171P6 AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RELAY 171K2 IN FUEL CONTROL RELAY BOX.

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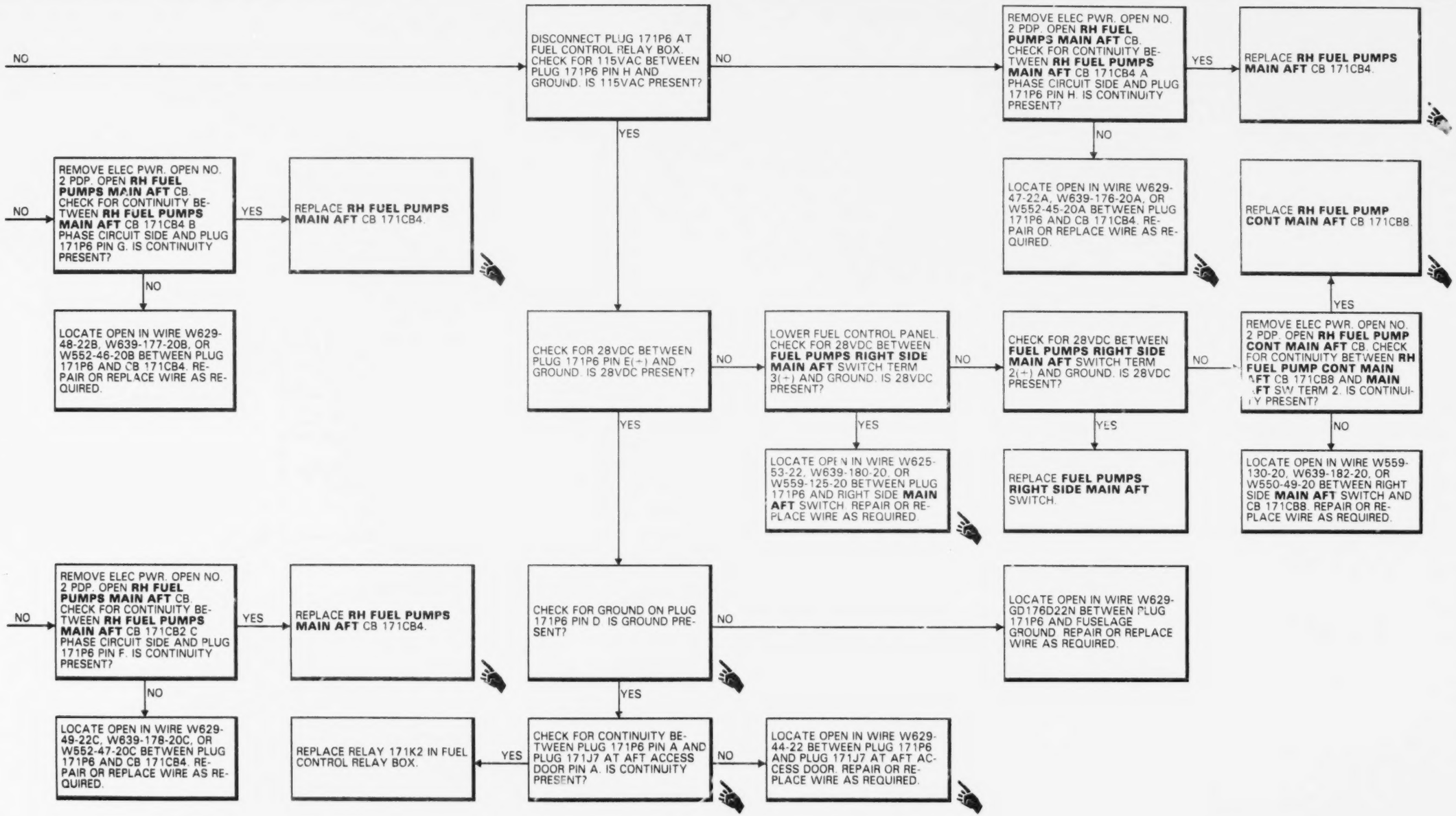
10-2.25 R FUEL PRESS CAPSULE DOES NOT GO OUT WHEN RIGHT SIDE MAIN AFT FUEL PUMPS SWITCH IS SET TO ON (Continued)


NO
DISCONNECT PLUG 171P6 AT FUEL CONTROL RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P6 PIN H AND GROUND. IS 115VAC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS MAIN AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS MAIN AFT** CB 171CB4 A PHASE CIRCUIT SIDE AND PLUG 171P6 PIN H. IS CONTINUITY PRESENT?
YES
REPLACE **RH FUEL PUMPS MAIN AFT** CB 171CB4.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS MAIN AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS MAIN AFT** CB 171CB4 B PHASE CIRCUIT SIDE AND PLUG 171P6 PIN G. IS CONTINUITY PRESENT?
YES
REPLACE **RH FUEL PUMPS MAIN AFT** CB 171CB4.
NO
LOCATE OPEN IN WIRE W629-47-22A, W639-176-20A, OR W552-45-20A BETWEEN PLUG 171P6 AND CB 171CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE **RH FUEL PUMP CONT MAIN AFT** CB 171CB8.
NO
LOCATE OPEN IN WIRE W629-48-22B, W639-177-20B, OR W552-46-20B BETWEEN PLUG 171P6 AND CB 171CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28VDC BETWEEN PLUG 171P6 PIN E(+) AND GROUND. IS 28VDC PRESENT?
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH TERM 3(+) AND GROUND. IS 28VDC PRESENT?
NO
CHECK FOR 28VDC BETWEEN **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH TERM 2(+) AND GROUND. IS 28VDC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMP CONT MAIN AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMP CONT MAIN AFT** CB 171CB8 AND **MAIN AFT** SW TERM 2. IS CONTINUITY PRESENT?
YES
YES
YES
YES
YES
NO
LOCATE OPEN IN WIRE W625-53-22, W639-180-20, OR W559-125-20 BETWEEN PLUG 171P6 AND RIGHT SIDE **MAIN AFT** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE **FUEL PUMPS RIGHT SIDE MAIN AFT** SWITCH.
LOCATE OPEN IN WIRE W559-130-20, W639-182-20, OR W550-49-20 BETWEEN RIGHT SIDE **MAIN AFT** SWITCH AND CB 171CB8. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS MAIN AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS MAIN AFT** CB 171CB2 C PHASE CIRCUIT SIDE AND PLUG 171P6 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE **RH FUEL PUMPS MAIN AFT** CB 171CB4.
CHECK FOR GROUND ON PLUG 171P6 PIN D. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W629-GD176D22N BETWEEN PLUG 171P6 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W629-49-22C, W639-178-20C, OR W552-47-20C BETWEEN PLUG 171P6 AND CB 171CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE RELAY 171K2 IN FUEL CONTROL RELAY BOX.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 171P6 PIN A AND PLUG 171J7 AT AFT ACCESS DOOR PIN A. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-44-22 BETWEEN PLUG 171P6 AND PLUG 171J7 AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES

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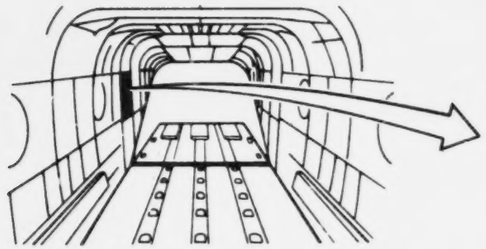
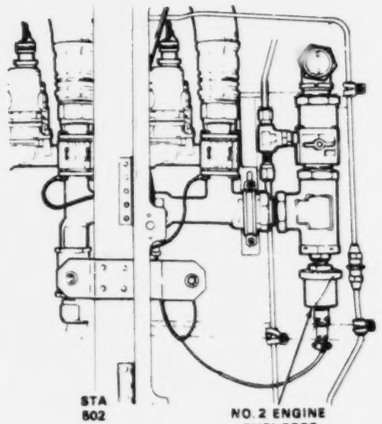
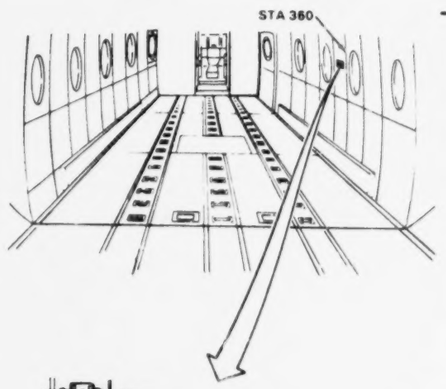
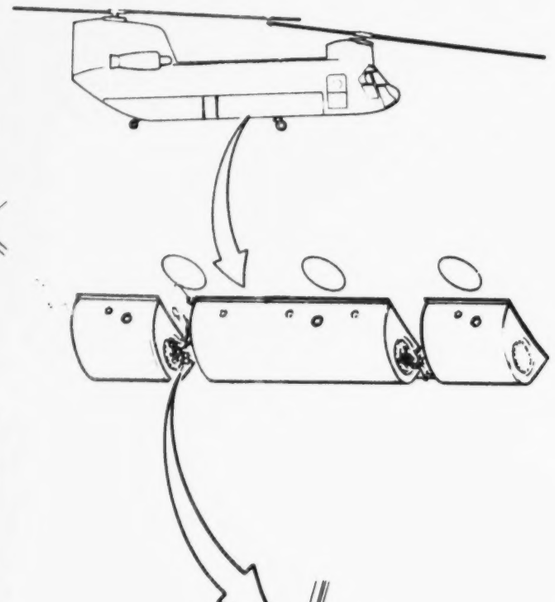
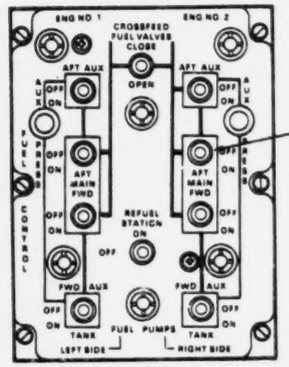


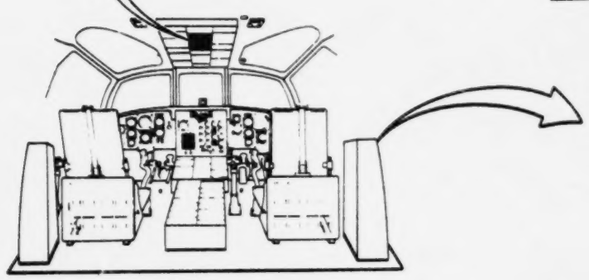






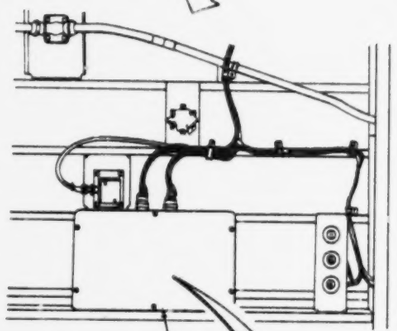


FUEL CONTROL PANEL

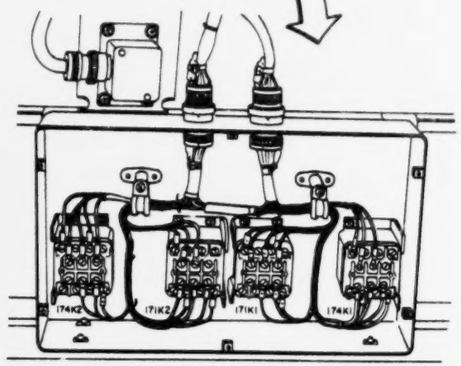


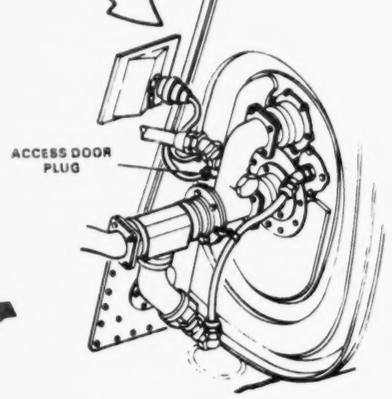
COCKPIT

NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



FUEL CONTROL RELAY BOX





NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.

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END OF TASK

10-2.26 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

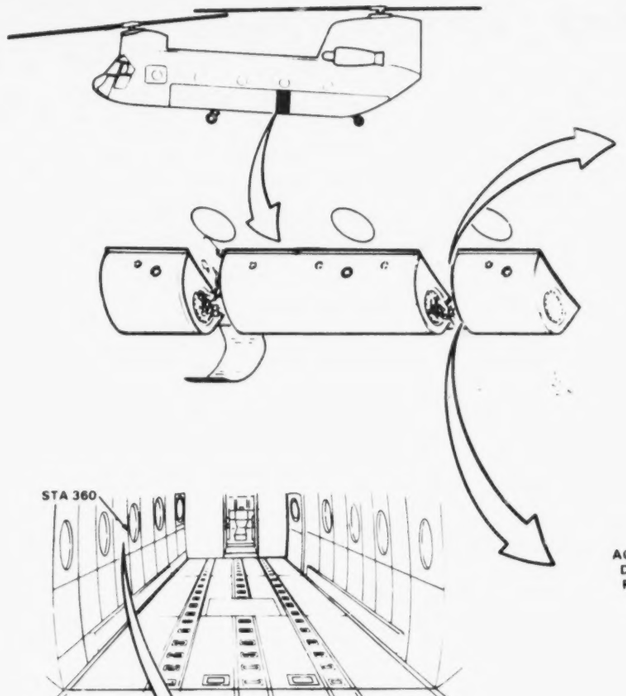
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

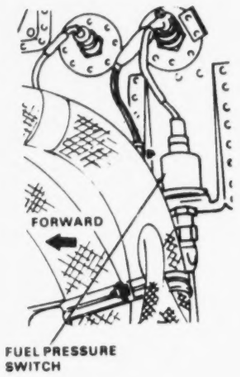
Materials:
None

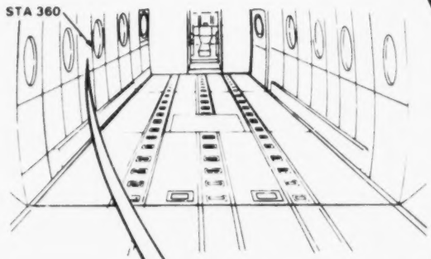
Personnel Required:
Aircraft Electrician (2)

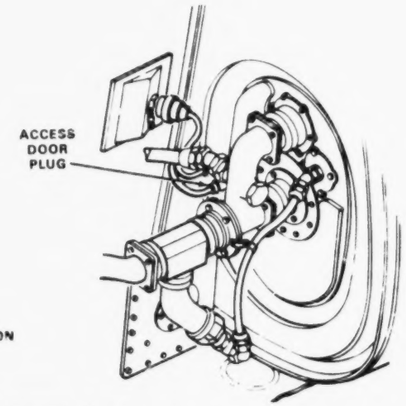
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Aft Intertank Access Panel Open

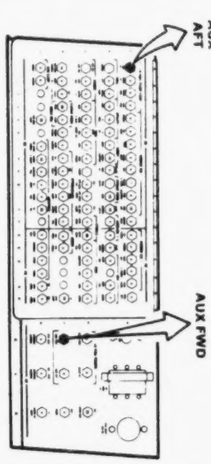




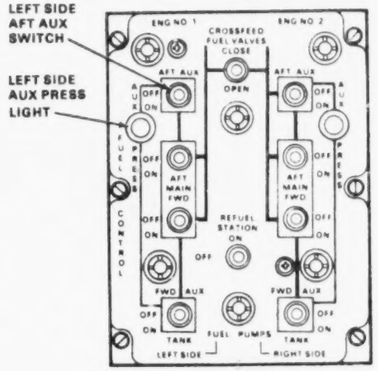




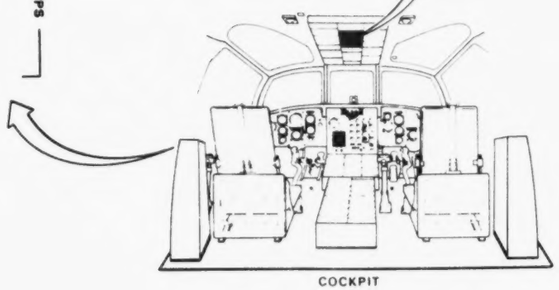
NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.



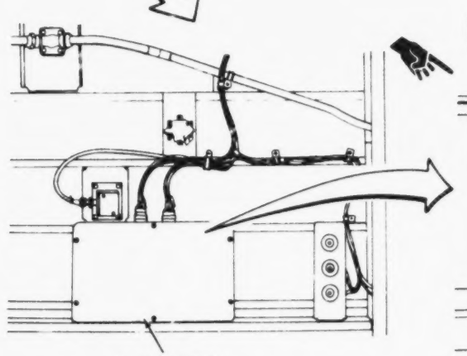
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



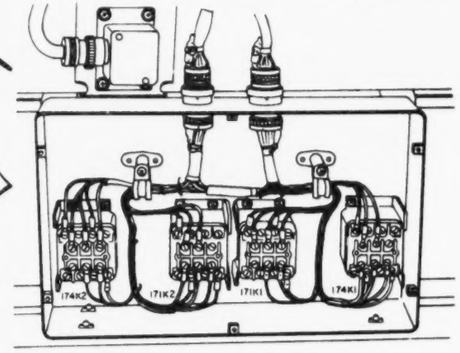
FUEL CONTROL PANEL



COCKPIT



FUEL CONTROL RELAY BOX



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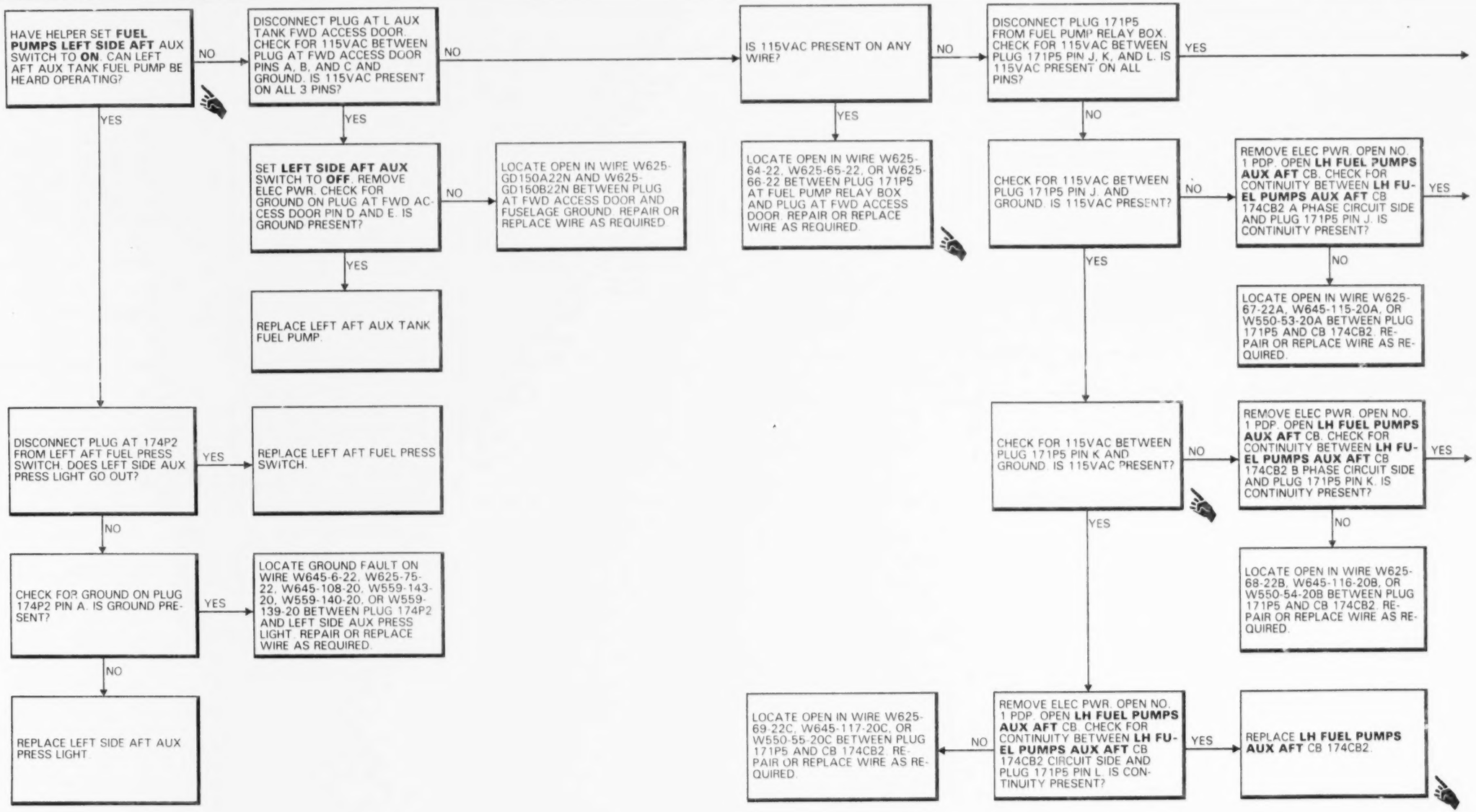
10-2.26 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


HAVE HELPER SET **FUEL PUMPS LEFT SIDE AFT** AUX SWITCH TO **ON**. CAN LEFT AFT AUX TANK FUEL PUMP BE HEARD OPERATING?
NO
YES
DISCONNECT PLUG AT L AUX TANK FWD ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
YES
SET **LEFT SIDE AFT AUX** SWITCH TO **OFF**. REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PIN D AND E. IS GROUND PRESENT?
NO
YES
LOCATE OPEN IN WIRE W625-GD150A22N AND W625-GD150B22N BETWEEN PLUG AT FWD ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE LEFT AFT AUX TANK FUEL PUMP.
IS 115VAC PRESENT ON ANY WIRE?
NO
YES
LOCATE OPEN IN WIRE W625-64-22, W625-65-22, OR W625-66-22 BETWEEN PLUG 171P5 AT FUEL PUMP RELAY BOX AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 171P5 FROM FUEL PUMP RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P5 PIN J, K, AND L. IS 115VAC PRESENT ON ALL PINS?
YES
NO
CHECK FOR 115VAC BETWEEN PLUG 171P5 PIN J AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN **LH FUEL PUMPS AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **LH FUEL PUMPS AUX AFT** CB 174CB2 A PHASE CIRCUIT SIDE AND PLUG 171P5 PIN J. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W625-67-22A, W645-115-20A, OR W550-53-20A BETWEEN PLUG 171P5 AND CB 174CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 115VAC BETWEEN PLUG 171P5 PIN K AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN **LH FUEL PUMPS AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **LH FUEL PUMPS AUX AFT** CB 174CB2 B PHASE CIRCUIT SIDE AND PLUG 171P5 PIN K. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W625-68-22B, W645-116-20B, OR W550-54-20B BETWEEN PLUG 171P5 AND CB 174CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN **LH FUEL PUMPS AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **LH FUEL PUMPS AUX AFT** CB 174CB2 CIRCUIT SIDE AND PLUG 171P5 PIN L. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN WIRE W625-69-22C, W645-117-20C, OR W550-55-20C BETWEEN PLUG 171P5 AND CB 174CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE **LH FUEL PUMPS AUX AFT** CB 174CB2.
DISCONNECT PLUG AT 174P2 FROM LEFT AFT FUEL PRESS SWITCH. DOES LEFT SIDE AUX PRESS LIGHT GO OUT?
YES
REPLACE LEFT AFT FUEL PRESS SWITCH.
NO
CHECK FOR GROUND ON PLUG 174P2 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-6-22, W625-75-22, W645-108-20, W559-143-20, W559-140-20, OR W559-139-20 BETWEEN PLUG 174P2 AND LEFT SIDE AUX PRESS LIGHT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE LEFT SIDE AFT AUX PRESS LIGHT.

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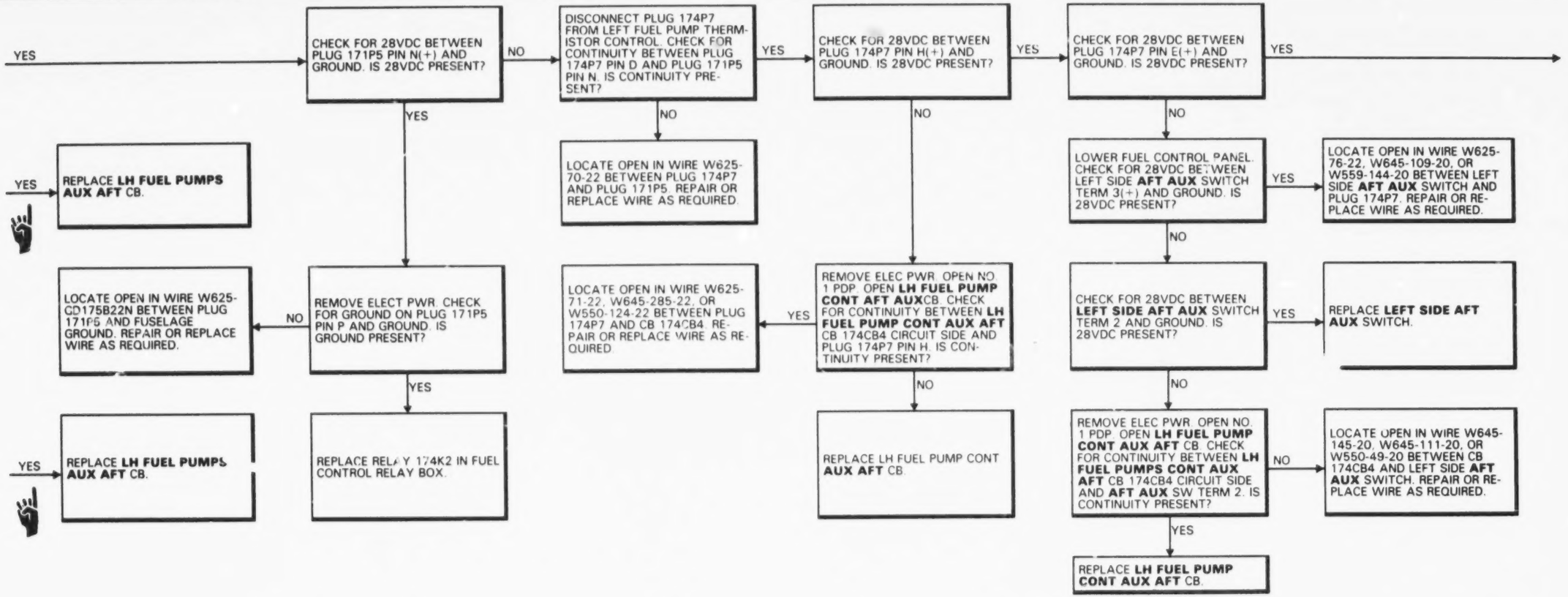
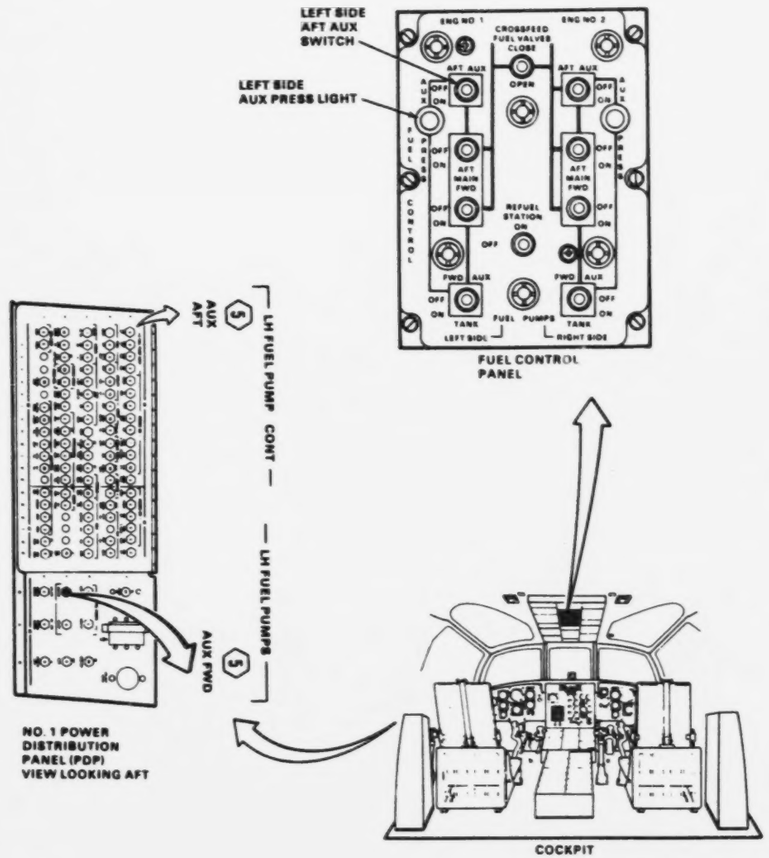
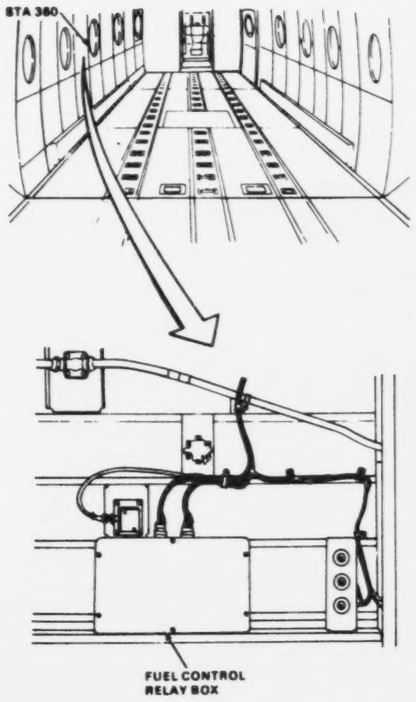
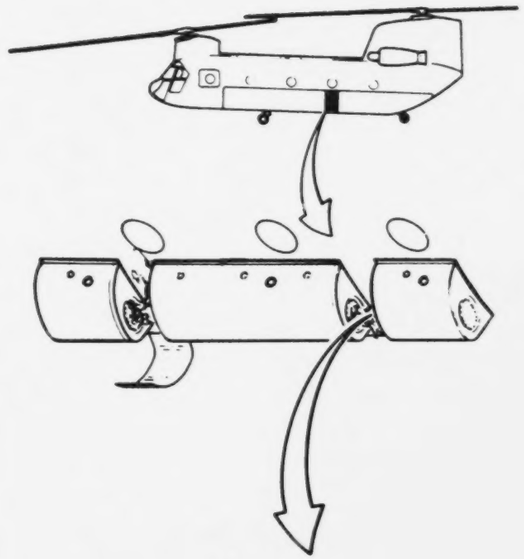
10-2.26 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)

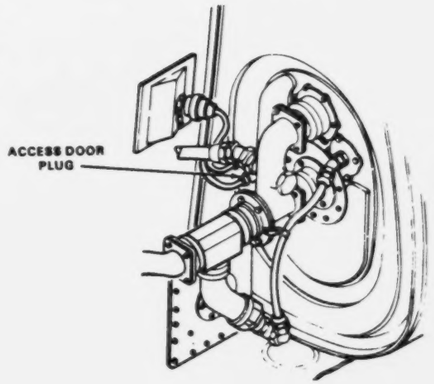

YES
CHECK FOR 28VDC BETWEEN PLUG 171P5 PIN N(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT PLUG 174P7 FROM LEFT FUEL PUMP THERMISTOR CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 174P7 PIN D AND PLUG 171P5 PIN N. IS CONTINUITY PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P7 PIN H(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P7 PIN E(+) AND GROUND. IS 28VDC PRESENT?
YES
YES
REPLACE LH FUEL PUMPS AUX AFT CB.
YES
LOCATE OPEN IN WIRE W625-70-22 BETWEEN PLUG 174P7 AND PLUG 171P5. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN LEFT SIDE AFT AUX SWITCH TERM 3(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W625-76-22, W645-109-20, OR W559-144-20 BETWEEN LEFT SIDE AFT AUX SWITCH AND PLUG 174P7. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W625-GD175B22N BETWEEN PLUG 171P5 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG 171P5 PIN P AND GROUND. IS GROUND PRESENT?
LOCATE OPEN IN WIRE W625-71-22, W645-285-22, OR W550-124-22 BETWEEN PLUG 174P7 AND CB 174CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMP CONT AFT AUXCB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMP CONT AUX AFT CB 174CB4 CIRCUIT SIDE AND PLUG 174P7 PIN H. IS CONTINUITY PRESENT?
CHECK FOR 28VDC BETWEEN LEFT SIDE AFT AUX SWITCH TERM 2 AND GROUND. IS 28VDC PRESENT?
YES
REPLACE LEFT SIDE AFT AUX SWITCH.
YES
REPLACE LH FUEL PUMPS AUX AFT CB.
YES
REPLACE RELAY 174K2 IN FUEL CONTROL RELAY BOX.
NO
REPLACE LH FUEL PUMP CONT AUX AFT CB.
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMP CONT AUX AFT CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMPS CONT AUX AFT CB 174CB4 CIRCUIT SIDE AND AFT AUX SW TERM 2. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W645-145-20, W645-111-20, OR W550-49-20 BETWEEN CB 174CB4 AND LEFT SIDE AFT AUX SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE LH FUEL PUMP CONT AUX AFT CB.

10-2.26 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)









NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.

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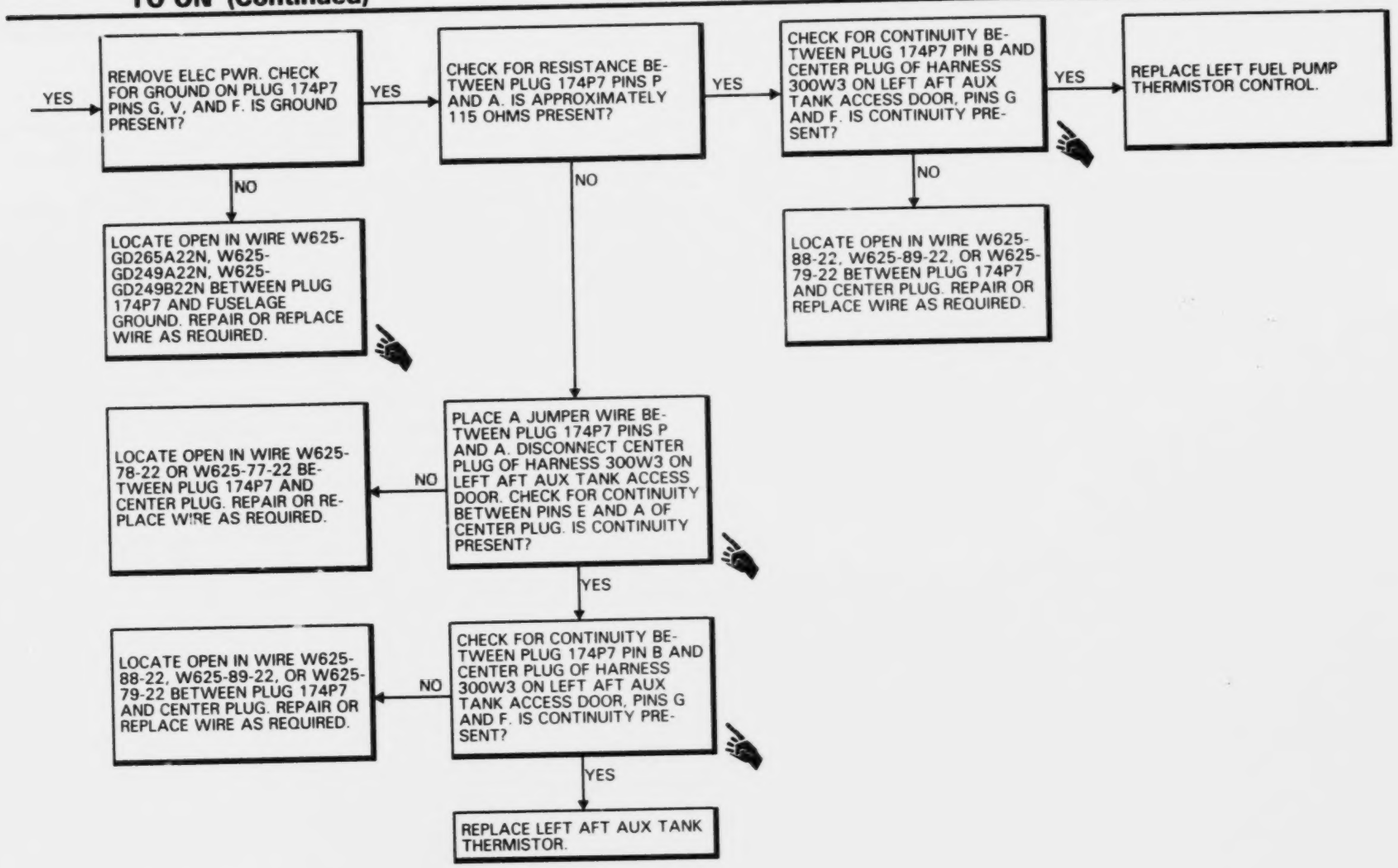
10-2.26 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG 174P7 PINS G, V, AND F. IS GROUND PRESENT?
YES
NO
CHECK FOR RESISTANCE BETWEEN PLUG 174P7 PINS P AND A. IS APPROXIMATELY 115 OHMS PRESENT?
YES
NO
CHECK FOR CONTINUITY BETWEEN PLUG 174P7 PIN B AND CENTER PLUG OF HARNESS 300W3 ON LEFT AFT AUX TANK ACCESS DOOR, PINS G AND F. IS CONTINUITY PRESENT?
YES
NO
REPLACE LEFT FUEL PUMP THERMISTOR CONTROL.
LOCATE OPEN IN WIRE W625-GD265A22N, W625-GD249A22N, W625-GD249B22N BETWEEN PLUG 174P7 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W625-88-22, W625-89-22, OR W625-79-22 BETWEEN PLUG 174P7 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
PLACE A JUMPER WIRE BETWEEN PLUG 174P7 PINS P AND A. DISCONNECT CENTER PLUG OF HARNESS 300W3 ON LEFT AFT AUX TANK ACCESS DOOR. CHECK FOR CONTINUITY BETWEEN PINS E AND A OF CENTER PLUG. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-78-22 OR W625-77-22 BETWEEN PLUG 174P7 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 174P7 PIN B AND CENTER PLUG OF HARNESS 300W3 ON LEFT AFT AUX TANK ACCESS DOOR, PINS G AND F. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-88-22, W625-89-22, OR W625-79-22 BETWEEN PLUG 174P7 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE LEFT AFT AUX TANK THERMISTOR.

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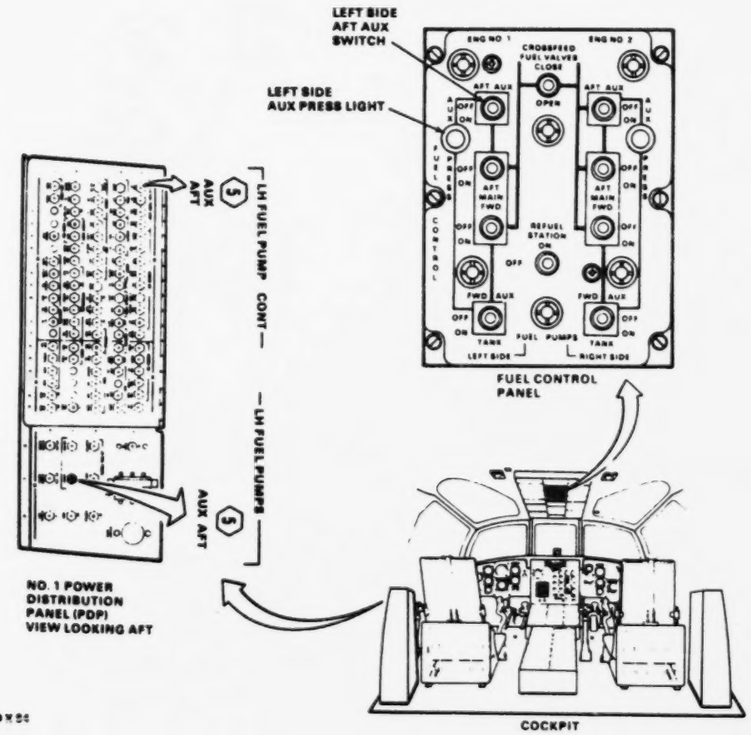
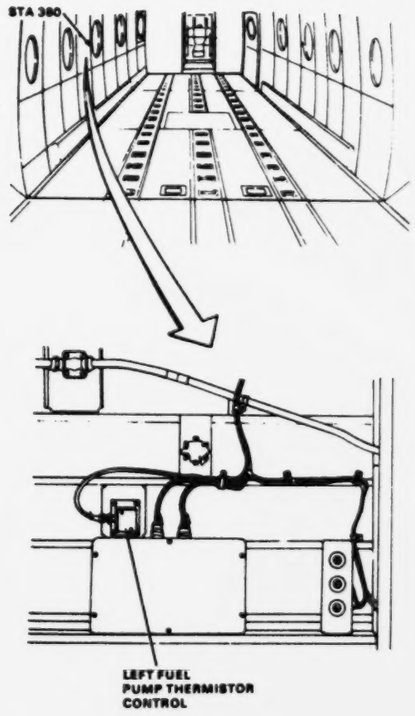
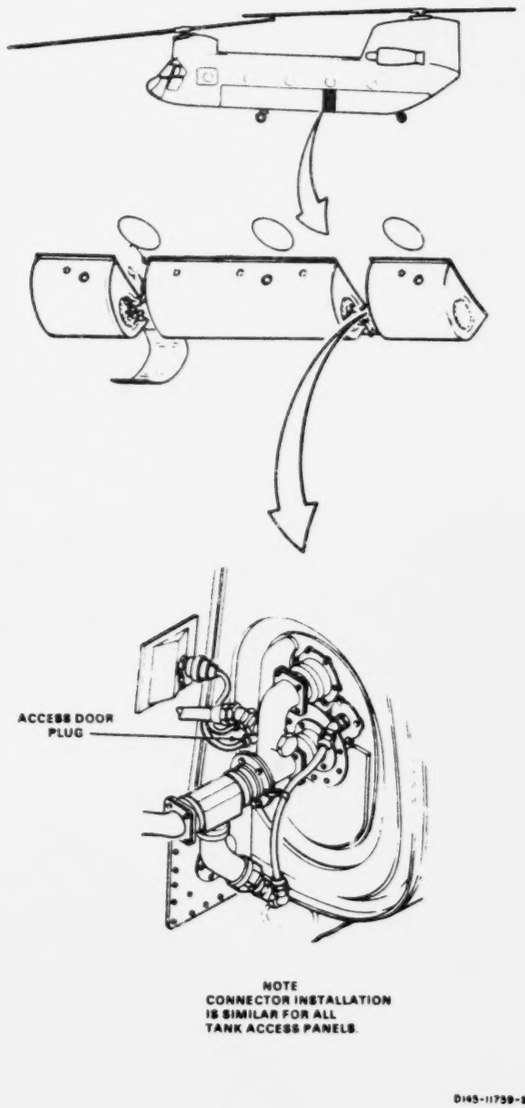
10-2.26 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)







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END OF TASK

10-2.27 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

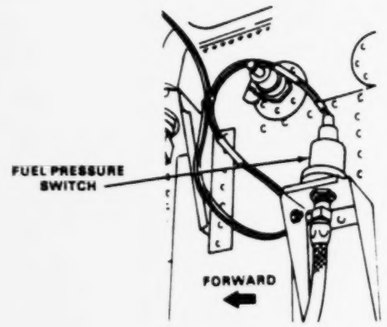
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

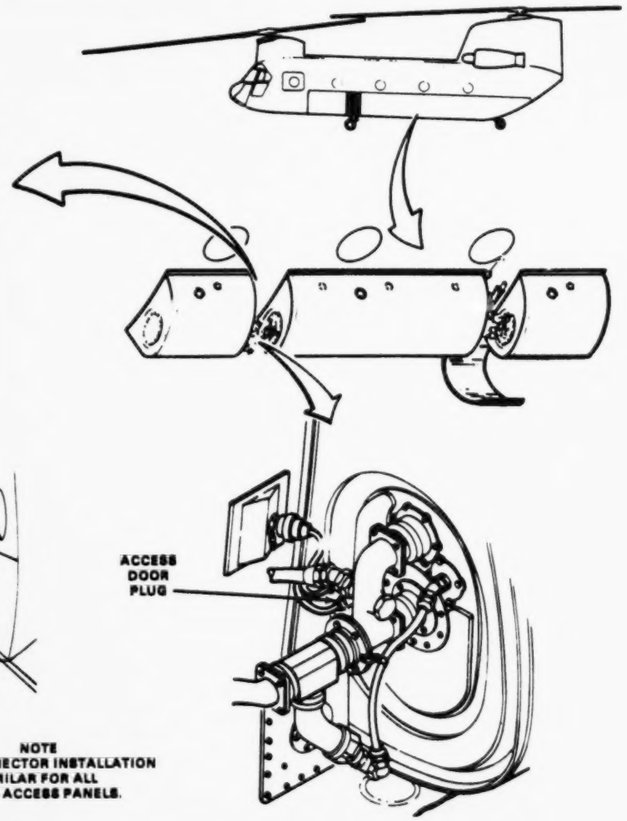
Materials:
None

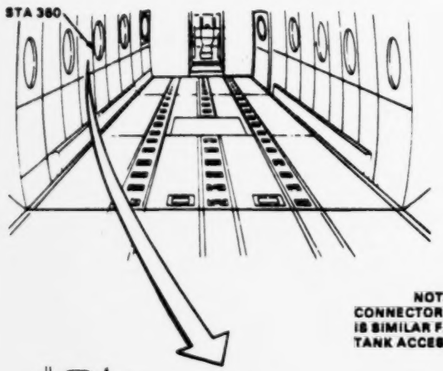
Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

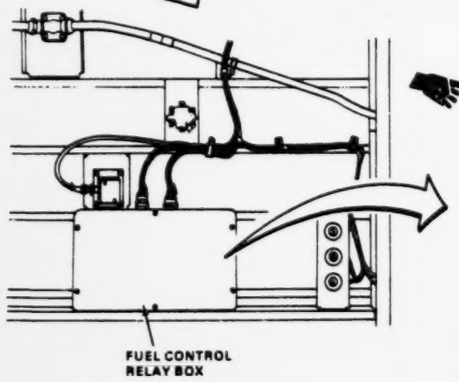
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Left Forward Landing Gear Access Panel Open

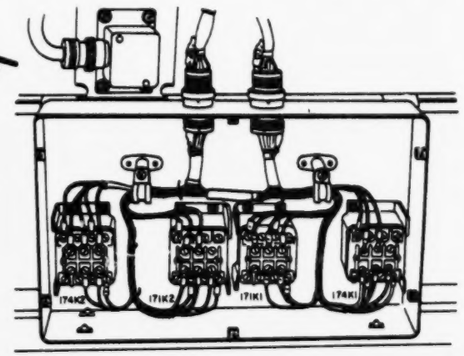


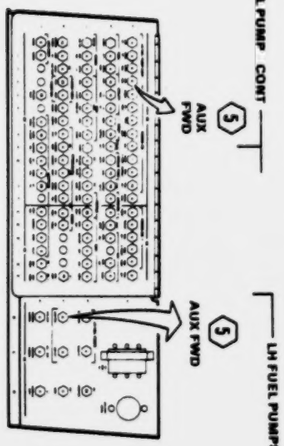




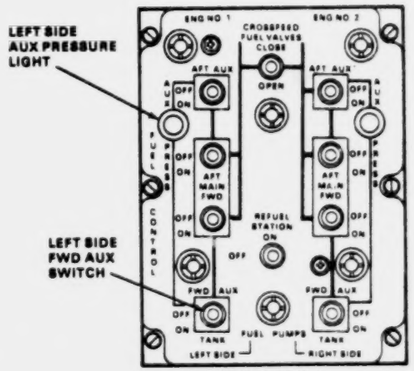
NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.



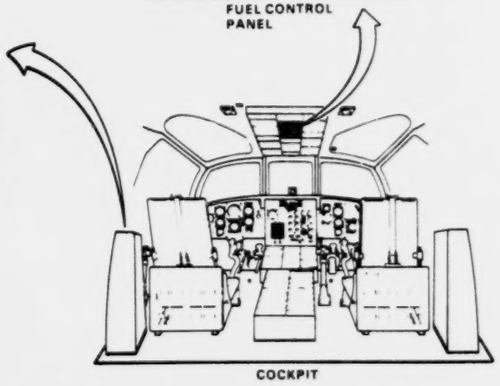




NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



FUEL CONTROL PANEL



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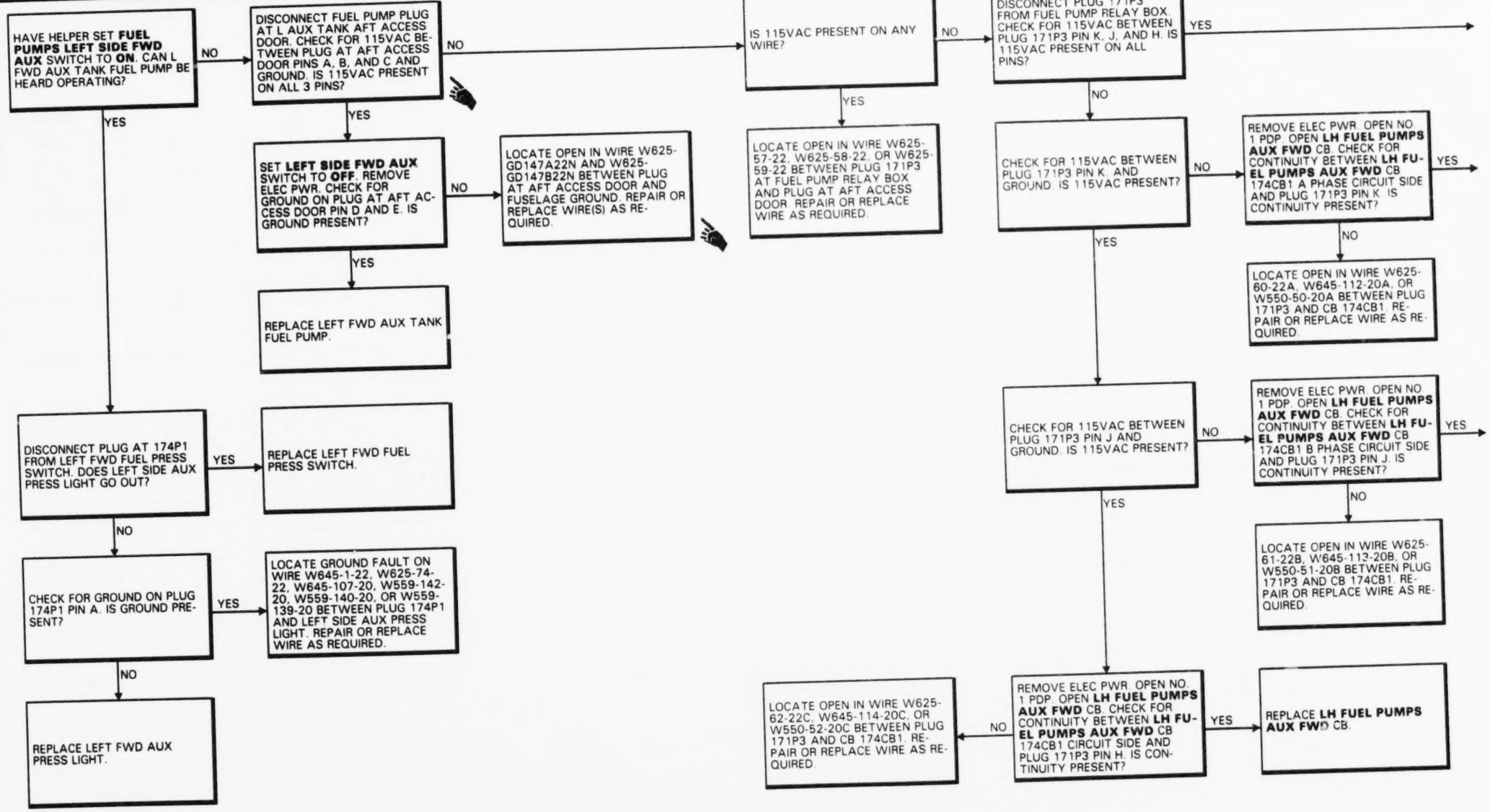
10-2.27 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


HAVE HELPER SET **FUEL PUMPS LEFT SIDE FWD AUX** SWITCH TO **ON**. CAN L FWD AUX TANK FUEL PUMP BE HEARD OPERATING?
NO
DISCONNECT FUEL PUMP PLUG AT L AUX TANK AFT ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
IS 115VAC PRESENT ON ANY WIRE?
NO
DISCONNECT PLUG 171P3 FROM FUEL PUMP RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P3 PIN K, J, AND H. IS 115VAC PRESENT ON ALL PINS?
YES
YES
SET **LEFT SIDE FWD AUX** SWITCH TO **OFF**. REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG AT AFT ACCESS DOOR PIN D AND E. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W625-GD147A22N AND W625-GD147B22N BETWEEN PLUG AT AFT ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE(S) AS REQUIRED.
LOCATE OPEN IN WIRE W625-57-22, W625-58-22, OR W625-59-22 BETWEEN PLUG 171P3 AT FUEL PUMP RELAY BOX AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE LEFT FWD AUX TANK FUEL PUMP.
YES
CHECK FOR 115VAC BETWEEN PLUG 171P3 PIN K AND GROUND. IS 115VAC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN **LH FUEL PUMPS AUX FWD** CB. CHECK FOR CONTINUITY BETWEEN **LH FUEL PUMPS AUX FWD** CB 174CB1 A PHASE CIRCUIT SIDE AND PLUG 171P3 PIN K. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W625-60-22A, W645-112-20A, OR W550-50-20A BETWEEN PLUG 171P3 AND CB 174CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG AT 174P1 FROM LEFT FWD FUEL PRESS SWITCH. DOES LEFT SIDE AUX PRESS LIGHT GO OUT?
YES
REPLACE LEFT FWD FUEL PRESS SWITCH.
YES
CHECK FOR 115VAC BETWEEN PLUG 171P3 PIN J AND GROUND. IS 115VAC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN **LH FUEL PUMPS AUX FWD** CB. CHECK FOR CONTINUITY BETWEEN **LH FUEL PUMPS AUX FWD** CB 174CB1 B PHASE CIRCUIT SIDE AND PLUG 171P3 PIN J. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W625-61-22B, W645-113-20B, OR W550-51-20B BETWEEN PLUG 171P3 AND CB 174CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PLUG 174P1 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-1-22, W625-74-22, W645-107-20, W559-142-20, W559-140-20, OR W559-139-20 BETWEEN PLUG 174P1 AND LEFT SIDE AUX PRESS LIGHT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE LEFT FWD AUX PRESS LIGHT.
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN **LH FUEL PUMPS AUX FWD** CB. CHECK FOR CONTINUITY BETWEEN **LH FUEL PUMPS AUX FWD** CB 174CB1 CIRCUIT SIDE AND PLUG 171P3 PIN H. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-62-22C, W645-114-20C, OR W550-52-20C BETWEEN PLUG 171P3 AND CB 174CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE **LH FUEL PUMPS AUX FWD** CB.

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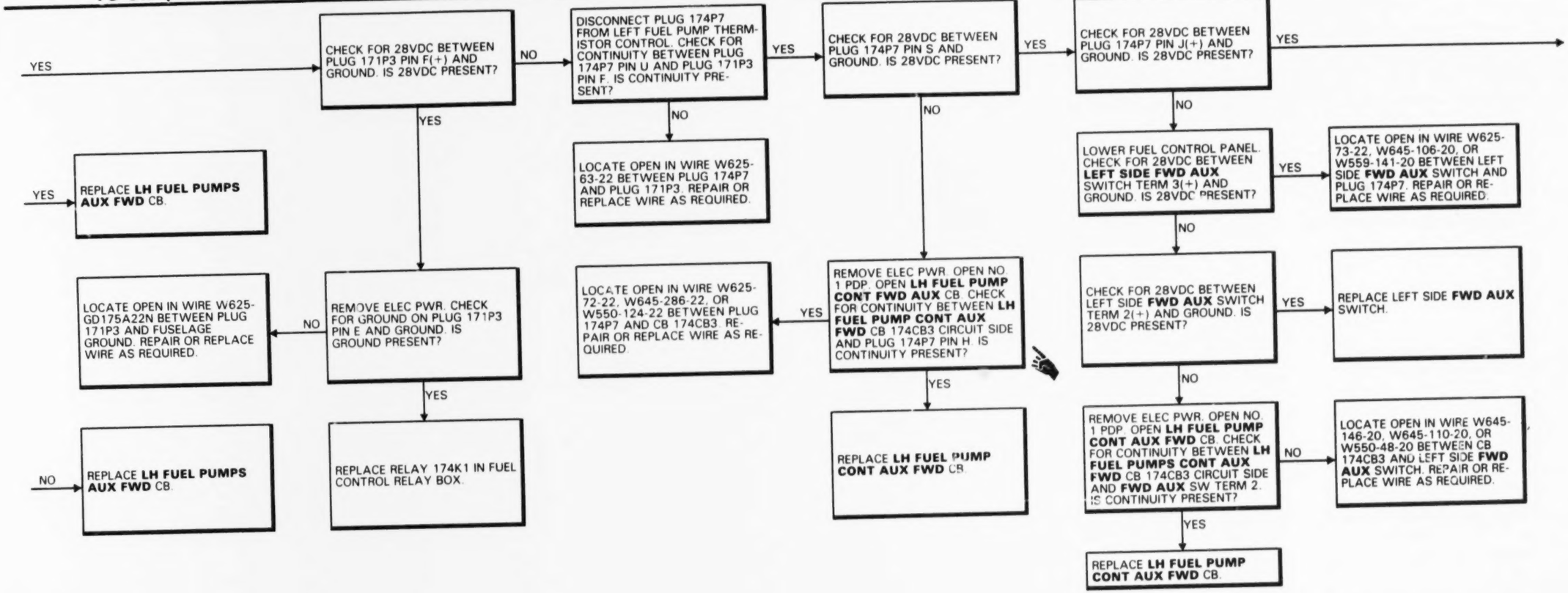
10-2.27 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


YES
CHECK FOR 28VDC BETWEEN PLUG 171P3 PIN F(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT PLUG 174P7 FROM LEFT FUEL PUMP THERMISTOR CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 174P7 PIN U AND PLUG 171P3 PIN F. IS CONTINUITY PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P7 PIN S AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P7 PIN J(+) AND GROUND. IS 28VDC PRESENT?
YES
YES
REPLACE LH FUEL PUMPS AUX FWD CB.
NO
LOCATE OPEN IN WIRE W625-63-22 BETWEEN PLUG 174P7 AND PLUG 171P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN LEFT SIDE FWD AUX SWITCH TERM 3(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W625-73-22, W645-106-20, OR W559-141-20 BETWEEN LEFT SIDE FWD AUX SWITCH AND PLUG 174P7. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W625-GD175A22N BETWEEN PLUG 171P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG 171P3 PIN E AND GROUND. IS GROUND PRESENT?
YES
LOCATE OPEN IN WIRE W625-72-22, W645-286-22, OR W550-124-22 BETWEEN PLUG 174P7 AND CB 174CB3. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMP CONT FWD AUX CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMP CONT AUX FWD CB 174CB3 CIRCUIT SIDE AND PLUG 174P7 PIN H. IS CONTINUITY PRESENT?
NO
CHECK FOR 28VDC BETWEEN LEFT SIDE FWD AUX SWITCH TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE LEFT SIDE FWD AUX SWITCH.
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. OPEN LH FUEL PUMP CONT AUX FWD CB. CHECK FOR CONTINUITY BETWEEN LH FUEL PUMPS CONT AUX FWD CB 174CB3 CIRCUIT SIDE AND FWD AUX SW TERM 2. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W645-146-20, W645-110-20, OR W550-48-20 BETWEEN CB 174CB3 AND LEFT SIDE FWD AUX SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE LH FUEL PUMP CONT AUX FWD CB.
NO
REPLACE LH FUEL PUMPS AUX FWD CB.
YES
REPLACE RELAY 174K1 IN FUEL CONTROL RELAY BOX.
YES
REPLACE LH FUEL PUMP CONT AUX FWD CB.

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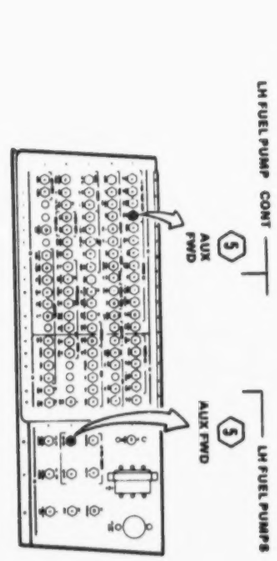
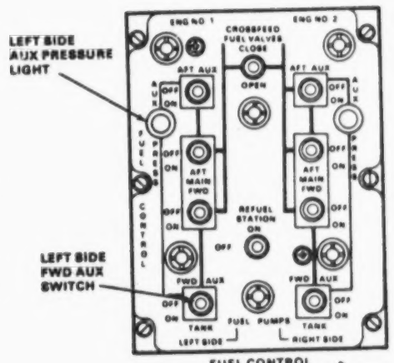
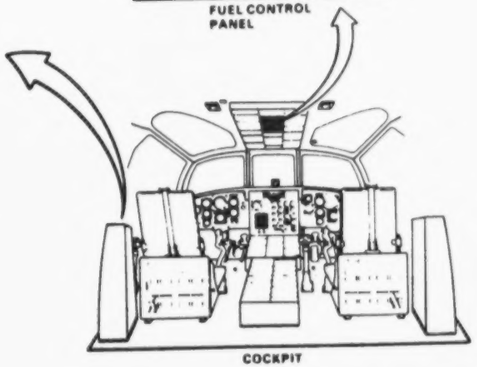
10-2.27 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)



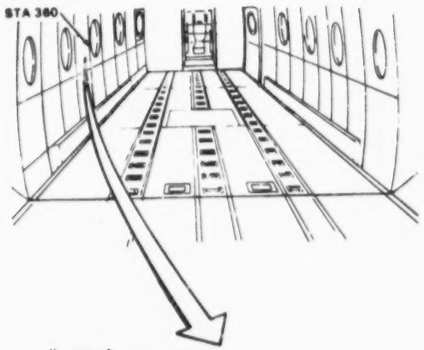
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

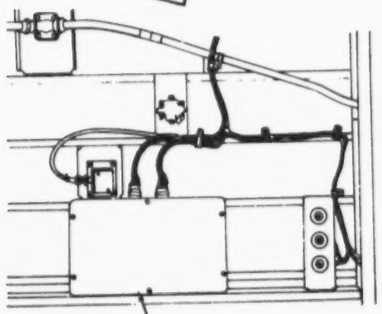


FUEL CONTROL PANEL

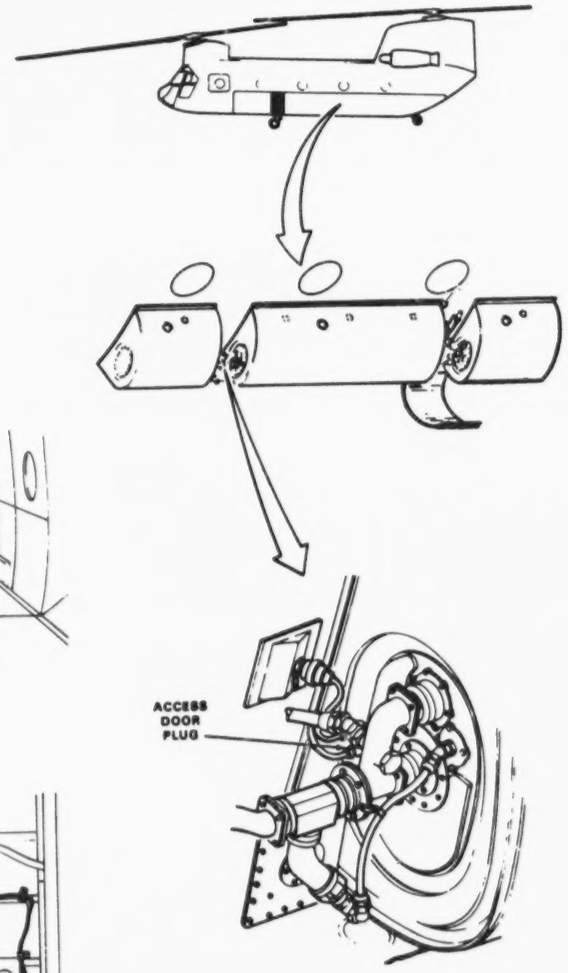


COCKPIT





FUEL CONTROL RELAY BOX



NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS

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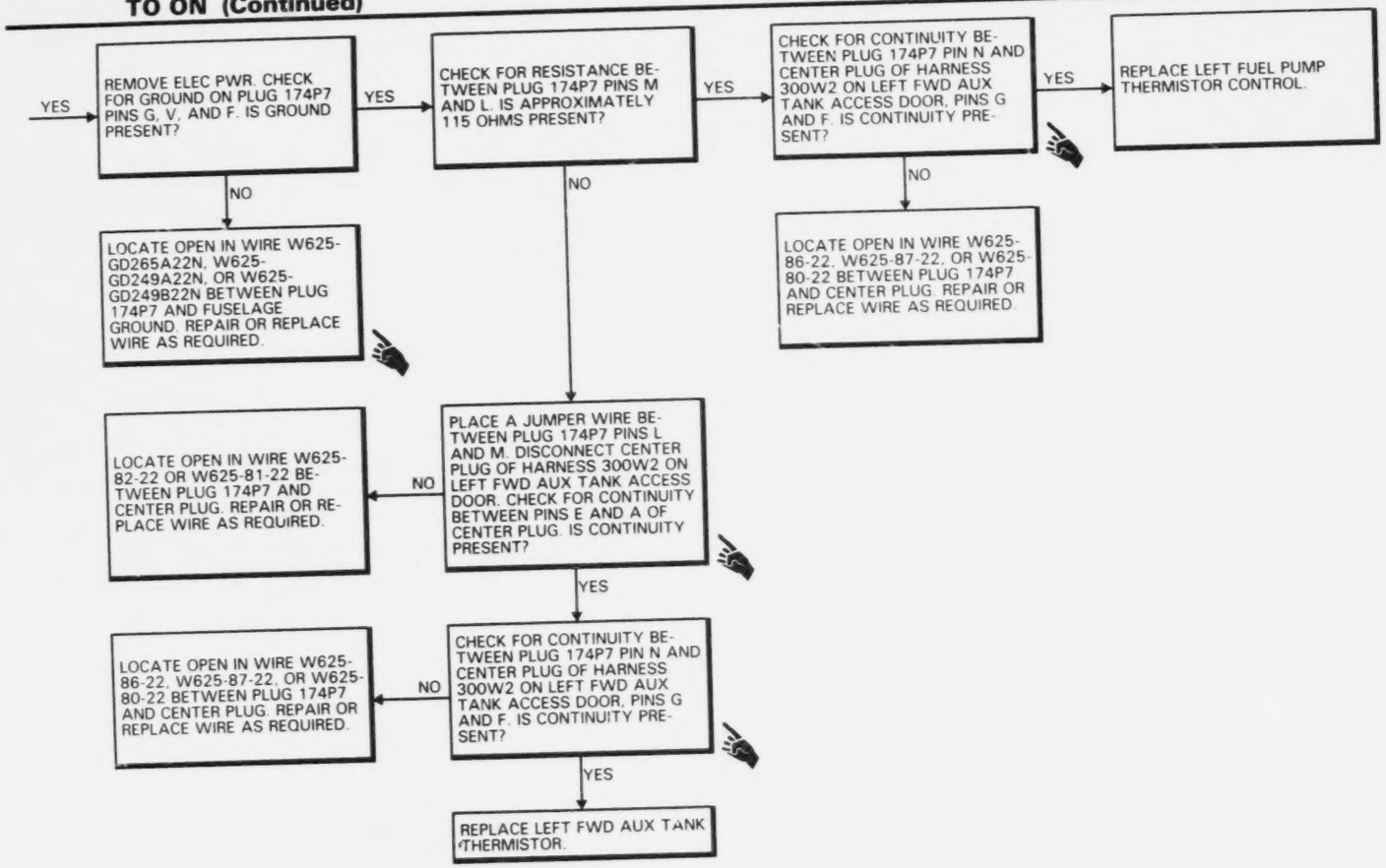
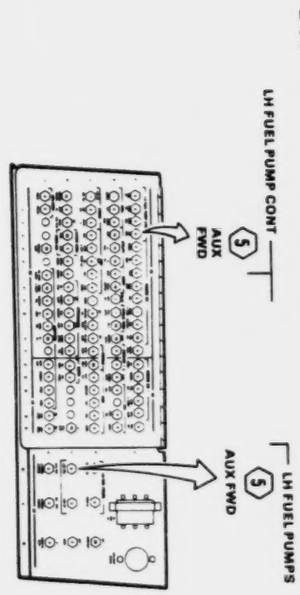
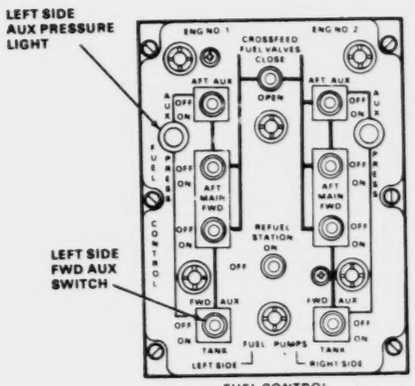
10-2.27 LEFT SIDE AUX PRESS LIGHT COMES ON WHEN LEFT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


YES
REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG 174P7 PINS G, V, AND F. IS GROUND PRESENT?
YES
CHECK FOR RESISTANCE BETWEEN PLUG 174P7 PINS M AND L. IS APPROXIMATELY 115 OHMS PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 174P7 PIN N AND CENTER PLUG OF HARNESS 300W2 ON LEFT FWD AUX TANK ACCESS DOOR, PINS G AND F. IS CONTINUITY PRESENT?
YES
REPLACE LEFT FUEL PUMP THERMISTOR CONTROL.
NO
LOCATE OPEN IN WIRE W625-GD265A22N, W625-GD249A22N, OR W625-GD249B22N BETWEEN PLUG 174P7 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W625-86-22, W625-87-22, OR W625-80-22 BETWEEN PLUG 174P7 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
PLACE A JUMPER WIRE BETWEEN PLUG 174P7 PINS L AND M. DISCONNECT CENTER PLUG OF HARNESS 300W2 ON LEFT FWD AUX TANK ACCESS DOOR. CHECK FOR CONTINUITY BETWEEN PINS E AND A OF CENTER PLUG. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-82-22 OR W625-81-22 BETWEEN PLUG 174P7 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 174P7 PIN N AND CENTER PLUG OF HARNESS 300W2 ON LEFT FWD AUX TANK ACCESS DOOR, PINS G AND F. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W625-86-22, W625-87-22, OR W625-80-22 BETWEEN PLUG 174P7 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE LEFT FWD AUX TANK THERMISTOR.

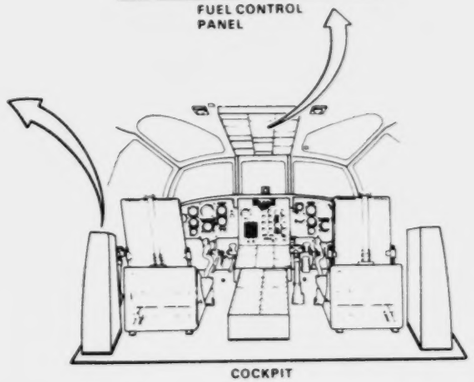
GO TO NEXT PAGE



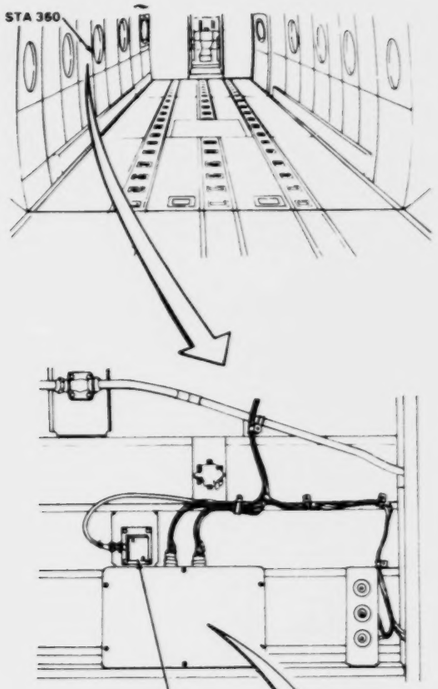
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



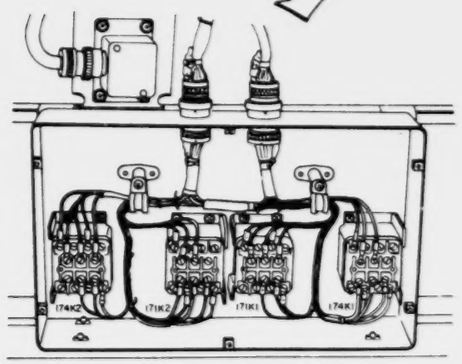
FUEL CONTROL PANEL

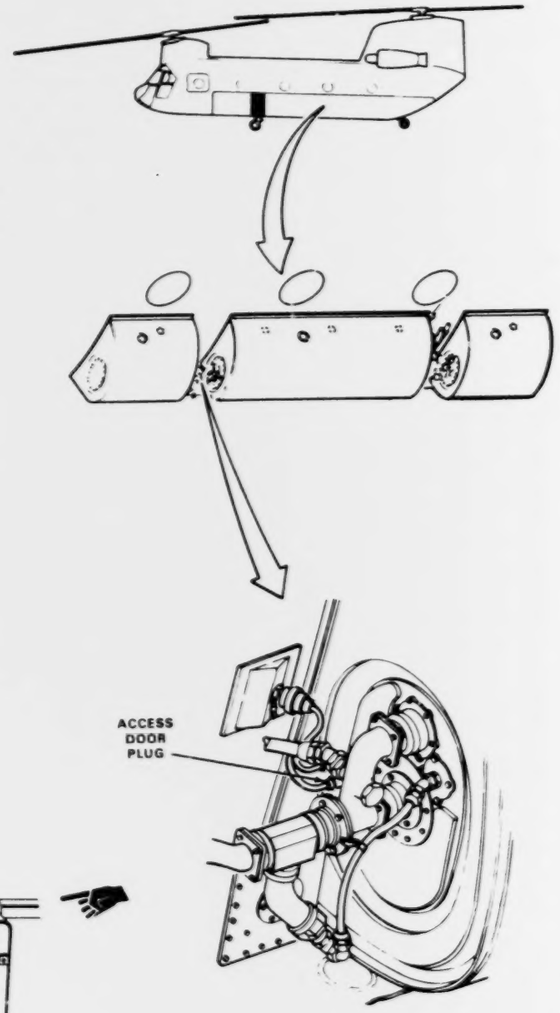


COCKPIT



LEFT FUEL PUMP THERMISTER CONTROL





NOTE
MAIN TANK ACCESS DOOR PLUG SHOWN. FORWARD TANK ACCESS DOOR PLUG SIMILAR

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END OF TASK

10-2.28 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

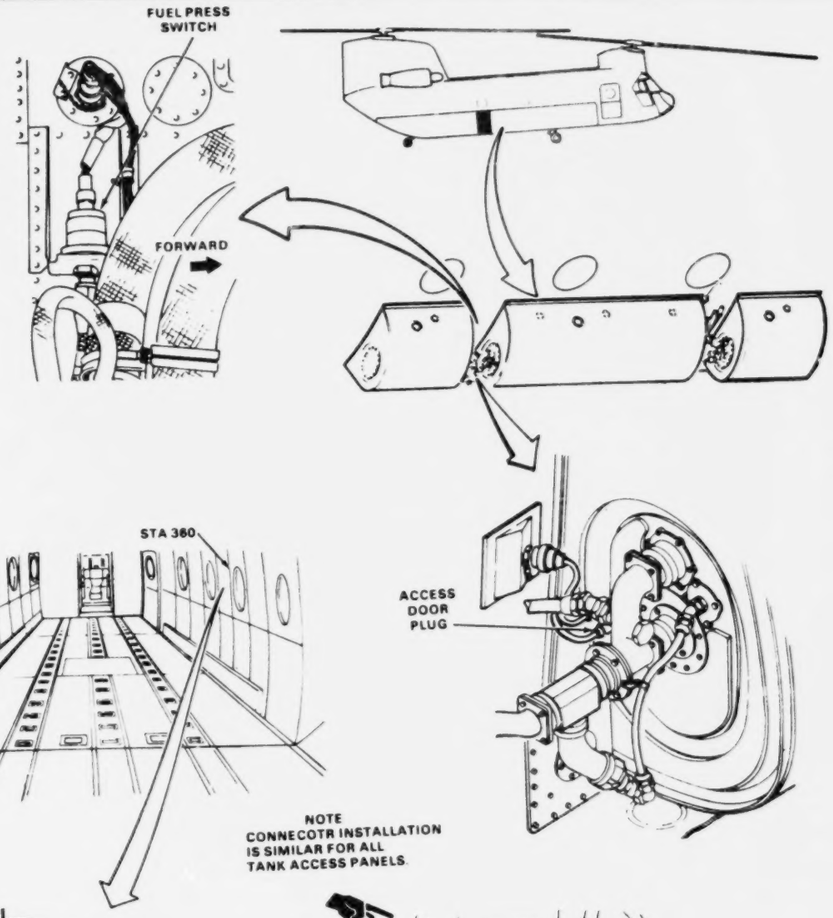
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

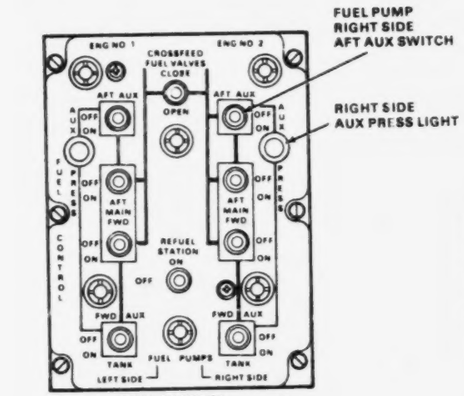
Materials:
None

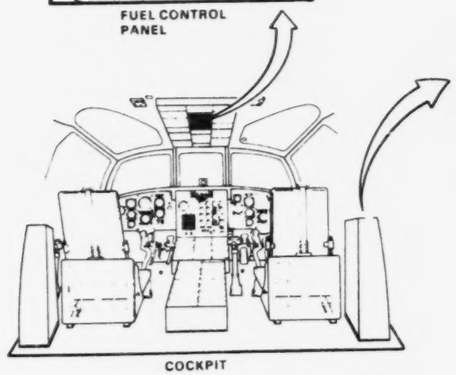
Personnel Required:
Aircraft Electrician (2)

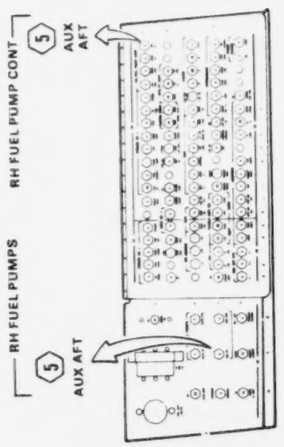
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Aft Intertank Access Panel Open









NO.2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

9640

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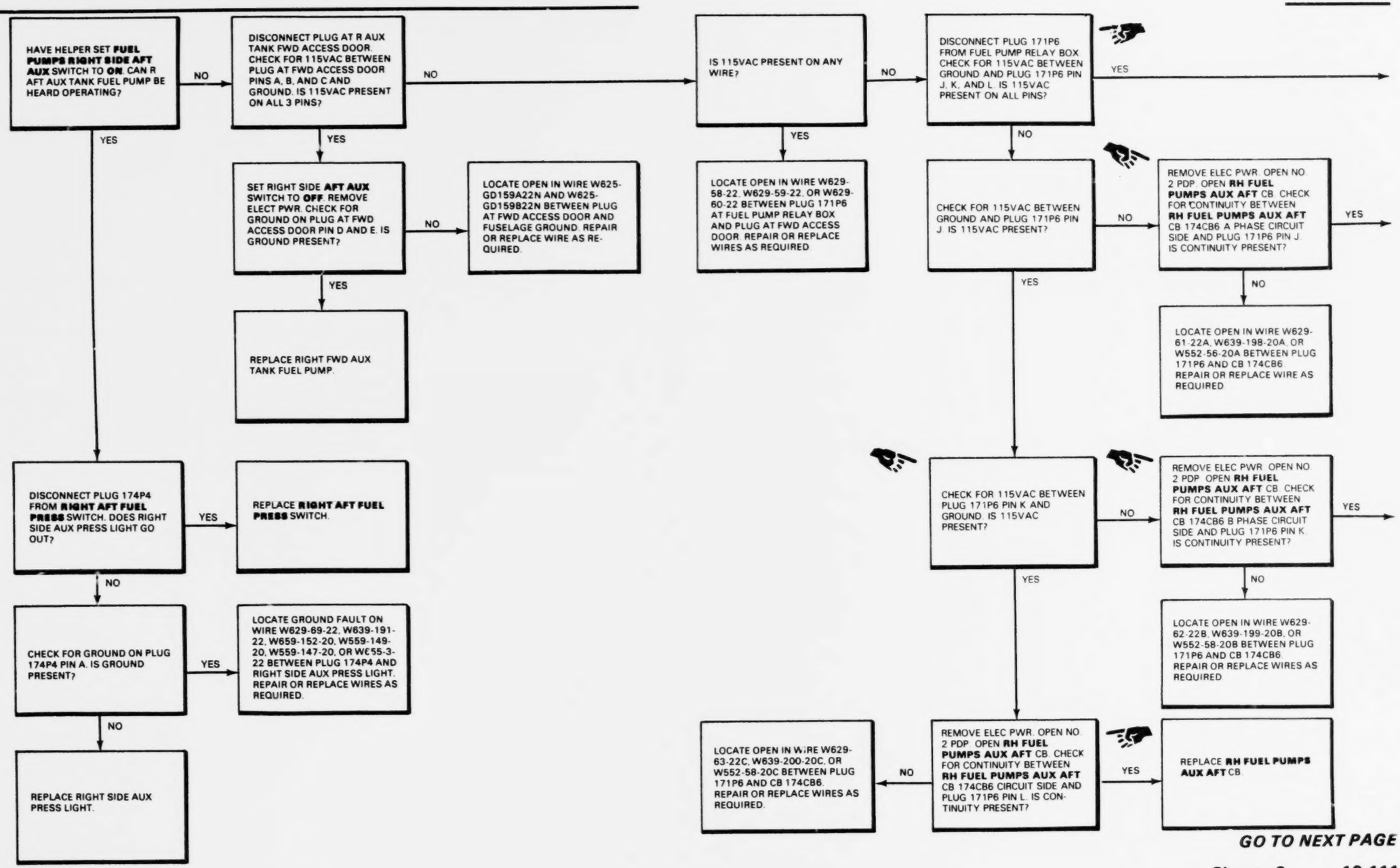
10-2.28 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AUX AFT FUEL PUMP SWITCH IS SET TO ON (Continued)


HAVE HELPER SET **FUEL PUMPS RIGHT SIDE AFT AUX** SWITCH TO **ON**. CAN R AFT AUX TANK FUEL PUMP BE HEARD OPERATING?
NO
YES
DISCONNECT PLUG AT R AUX TANK FWD ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT FWD ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
YES
SET RIGHT SIDE **AFT AUX** SWITCH TO **OFF**. REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG AT FWD ACCESS DOOR PIN D AND E. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W625-GD159A22N AND W625-GD159B22N BETWEEN PLUG AT FWD ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RIGHT FWD AUX TANK FUEL PUMP.
IS 115VAC PRESENT ON ANY WIRE?
NO
YES
LOCATE OPEN IN WIRE W629-58-22, W629-59-22, OR W629-60-22 BETWEEN PLUG 171P6 AT FUEL PUMP RELAY BOX AND PLUG AT FWD ACCESS DOOR. REPAIR OR REPLACE WIRES AS REQUIRED.
DISCONNECT PLUG 171P6 FROM FUEL PUMP RELAY BOX. CHECK FOR 115VAC BETWEEN GROUND AND PLUG 171P6 PIN J, K, AND L. IS 115VAC PRESENT ON ALL PINS?
YES
NO
CHECK FOR 115VAC BETWEEN GROUND AND PLUG 171P6 PIN J. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS AUX AFT** CB 174CB6 A PHASE CIRCUIT SIDE AND PLUG 171P6 PIN J. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-61-22A, W639-198-20A, OR W552-56-20A BETWEEN PLUG 171P6 AND CB 174CB6. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 174P4 FROM **RIGHT AFT FUEL PRESS** SWITCH. DOES RIGHT SIDE AUX PRESS LIGHT GO OUT?
YES
REPLACE **RIGHT AFT FUEL PRESS** SWITCH.
NO
CHECK FOR GROUND ON PLUG 174P4 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-69-22, W639-191-22, W659-152-20, W559-149-20, W559-147-20, OR W655-3-22 BETWEEN PLUG 174P4 AND RIGHT SIDE AUX PRESS LIGHT. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
REPLACE RIGHT SIDE AUX PRESS LIGHT.
CHECK FOR 115VAC BETWEEN PLUG 171P6 PIN K AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS AUX AFT** CB 174CB6 B PHASE CIRCUIT SIDE AND PLUG 171P6 PIN K. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-62-22B, W639-199-20B, OR W552-58-20B BETWEEN PLUG 171P6 AND CB 174CB6. REPAIR OR REPLACE WIRES AS REQUIRED.
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS AUX AFT** CB 174CB6 CIRCUIT SIDE AND PLUG 171P6 PIN L. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN WIRE W629-63-22C, W639-200-20C, OR W552-58-20C BETWEEN PLUG 171P6 AND CB 174CB6. REPAIR OR REPLACE WIRES AS REQUIRED.
REPLACE **RH FUEL PUMPS AUX AFT** CB.

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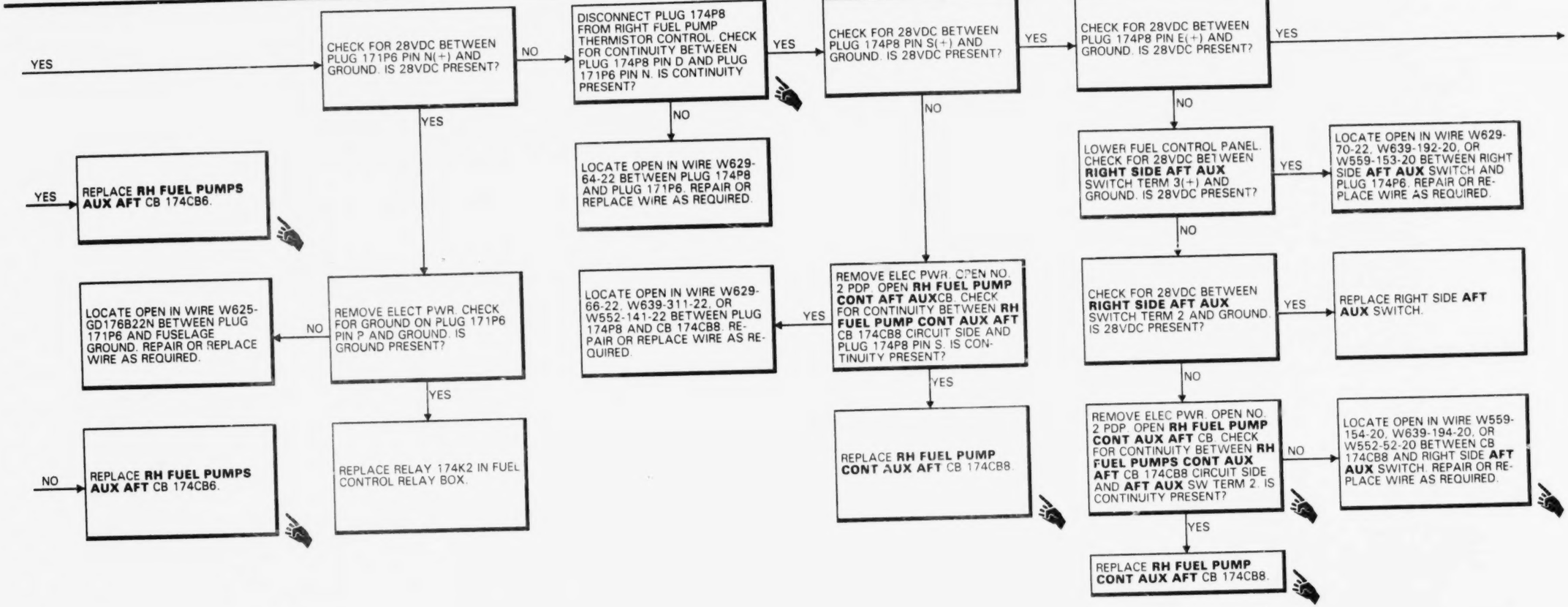
10-2.28 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


YES
CHECK FOR 28VDC BETWEEN PLUG 171P6 PIN N(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT PLUG 174P8 FROM RIGHT FUEL PUMP THERMISTOR CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 174P8 PIN D AND PLUG 171P6 PIN N. IS CONTINUITY PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P8 PIN S(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P8 PIN E(+) AND GROUND. IS 28VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-64-22 BETWEEN PLUG 174P8 AND PLUG 171P6. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN **RIGHT SIDE AFT AUX** SWITCH TERM 3(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W629-70-22, W639-192-20, OR W559-153-20 BETWEEN RIGHT SIDE **AFT AUX** SWITCH AND PLUG 174P6. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE **RH FUEL PUMPS AUX AFT** CB 174CB6.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMP CONT AFT AUX**CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMP CONT AUX AFT** CB 174CB8 CIRCUIT SIDE AND PLUG 174P8 PIN S. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W629-66-22, W639-311-22, OR W552-141-22 BETWEEN PLUG 174P8 AND CB 174CB8. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG 171P6 PIN P AND GROUND. IS GROUND PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD176B22N BETWEEN PLUG 171P6 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28VDC BETWEEN **RIGHT SIDE AFT AUX** SWITCH TERM 2 AND GROUND. IS 28VDC PRESENT?
YES
REPLACE RIGHT SIDE **AFT AUX** SWITCH.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMP CONT AUX AFT** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS CONT AUX AFT** CB 174CB8 CIRCUIT SIDE AND **AFT AUX** SW TERM 2. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W559-154-20, W639-194-20, OR W552-52-20 BETWEEN CB 174CB8 AND RIGHT SIDE **AFT AUX** SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE **RH FUEL PUMP CONT AUX AFT** CB 174CB8.
YES
REPLACE **RH FUEL PUMP CONT AUX AFT** CB 174CB8.
NO
REPLACE RELAY 174K2 IN FUEL CONTROL RELAY BOX.
NO
REPLACE **RH FUEL PUMPS AUX AFT** CB 174CB6.

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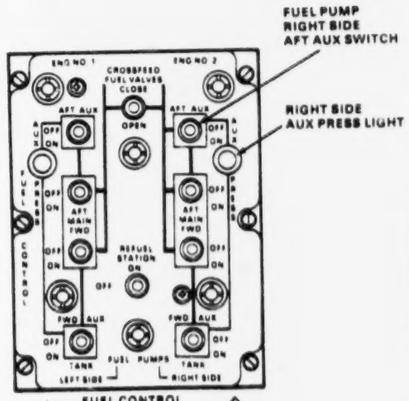
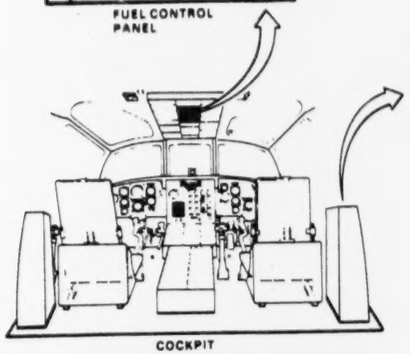
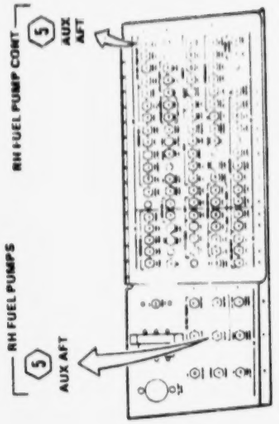
10-2.28 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)



FUEL CONTROL PANEL

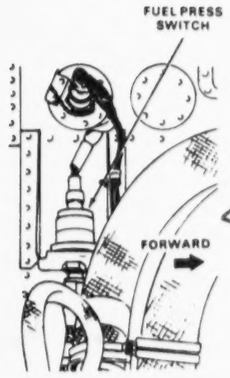


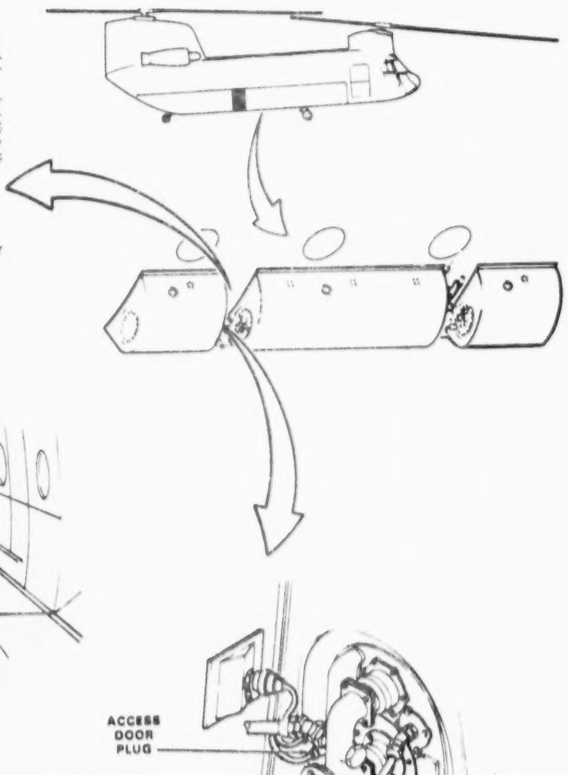
COCKPIT

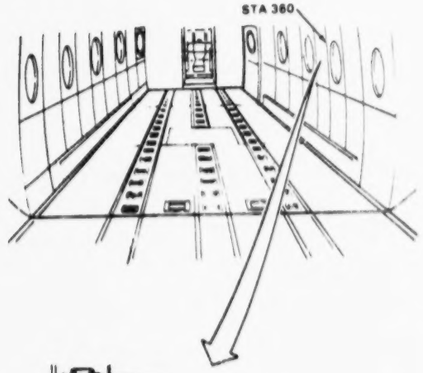


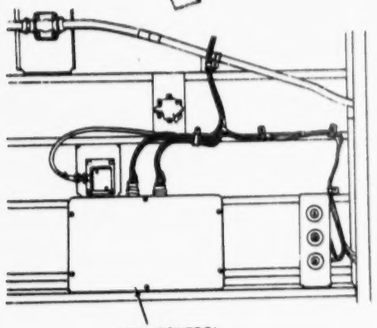
NO.2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

90 X 84

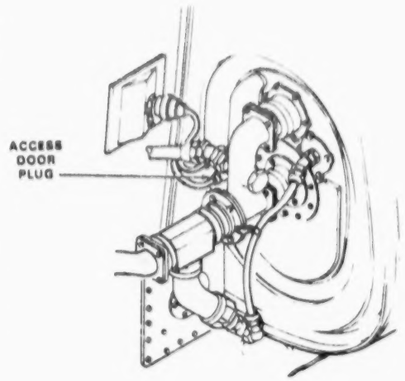








FUEL CONTROL RELAY BOX



NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS

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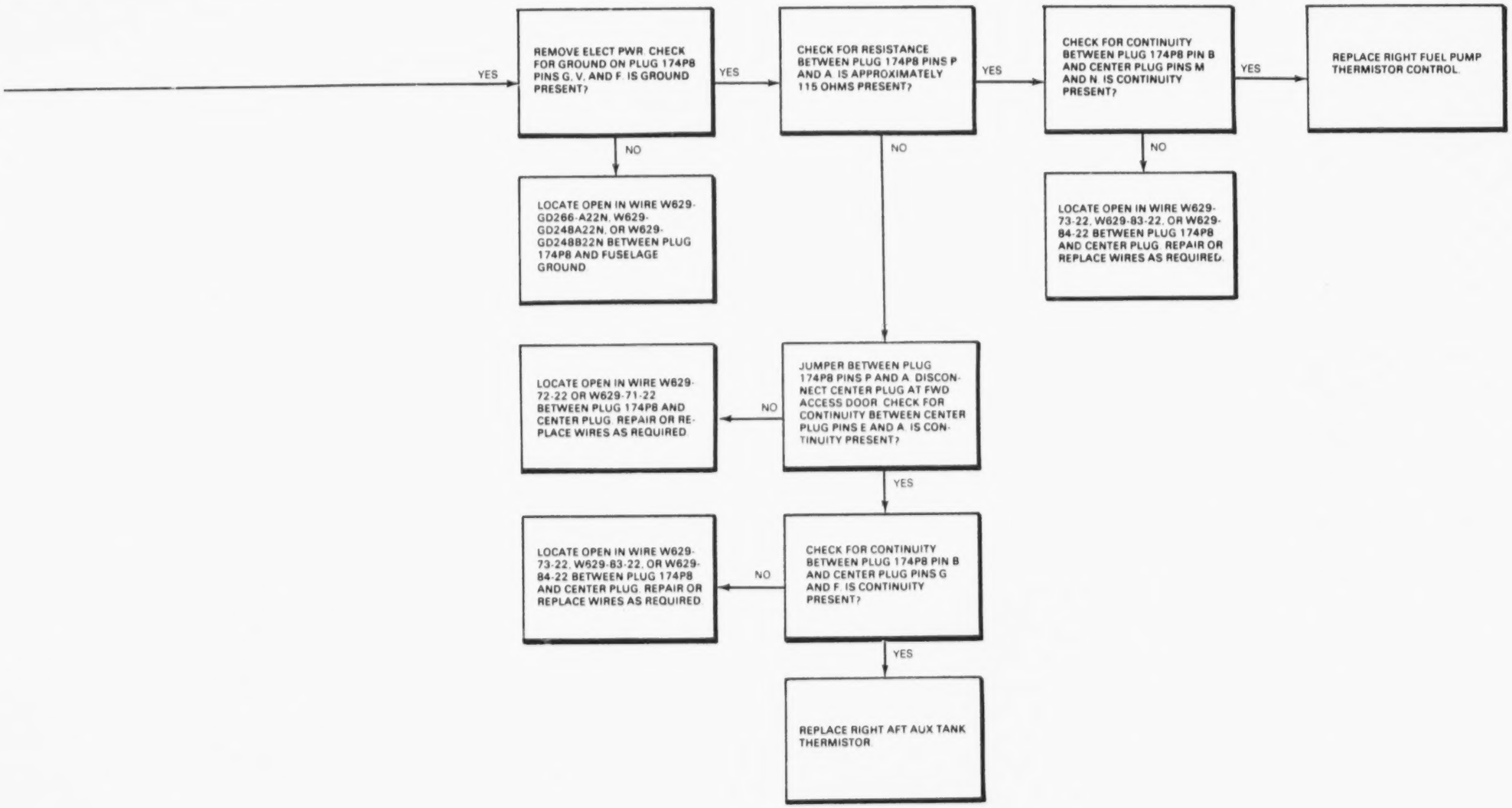
10-2.28 RIGHT SIDE AUX PRESS LIGHT DOES NOT COME ON WHEN RIGHT SIDE AUX AFT FUEL PUMP SWITCH IS SET TO ON (Continued)


YES
REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG 174P8 PINS G, V, AND F. IS GROUND PRESENT?
YES
CHECK FOR RESISTANCE BETWEEN PLUG 174P8 PINS P AND A. IS APPROXIMATELY 115 OHMS PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 174P8 PIN B AND CENTER PLUG PINS M AND N. IS CONTINUITY PRESENT?
YES
REPLACE RIGHT FUEL PUMP THERMISTOR CONTROL.
NO
LOCATE OPEN IN WIRE W629-GD266-A22N, W629-GD248A22N, OR W629-GD248B22N BETWEEN PLUG 174P8 AND FUSELAGE GROUND
NO
LOCATE OPEN IN WIRE W629-73-22, W629-83-22, OR W629-84-22 BETWEEN PLUG 174P8 AND CENTER PLUG. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
LOCATE OPEN IN WIRE W629-72-22 OR W629-71-22 BETWEEN PLUG 174P8 AND CENTER PLUG. REPAIR OR REPLACE WIRES AS REQUIRED
JUMPER BETWEEN PLUG 174P8 PINS P AND A. DISCONNECT CENTER PLUG AT FWD ACCESS DOOR. CHECK FOR CONTINUITY BETWEEN CENTER PLUG PINS E AND A. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-73-22, W629-83-22, OR W629-84-22 BETWEEN PLUG 174P8 AND CENTER PLUG. REPAIR OR REPLACE WIRES AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 174P8 PIN B AND CENTER PLUG PINS G AND F. IS CONTINUITY PRESENT?
YES
REPLACE RIGHT AFT AUX TANK THERMISTOR.

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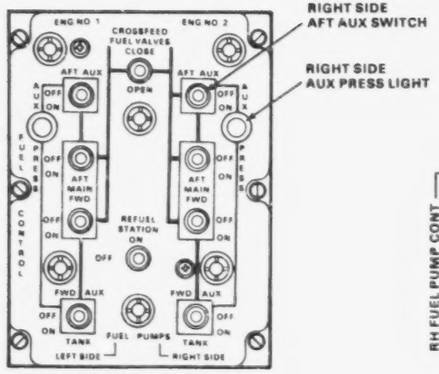
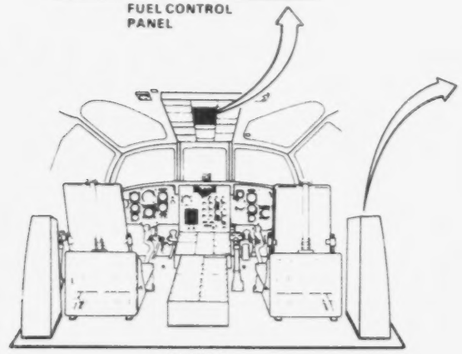
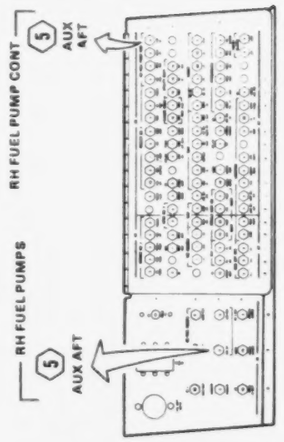
10-2.28 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE AFT AUX FUEL PUMP SWITCH IS SET TO ON (Continued)



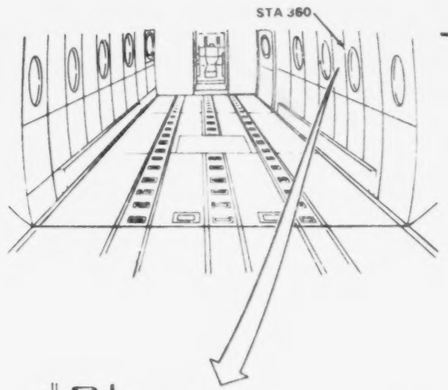
FUEL PUMP RIGHT SIDE AFT AUX SWITCH

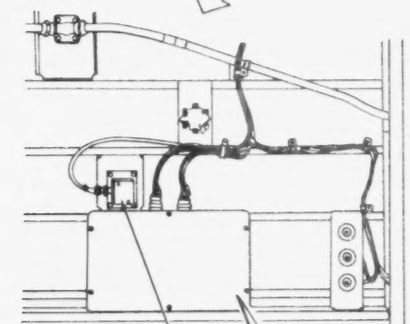
RIGHT SIDE AUX PRESS LIGHT



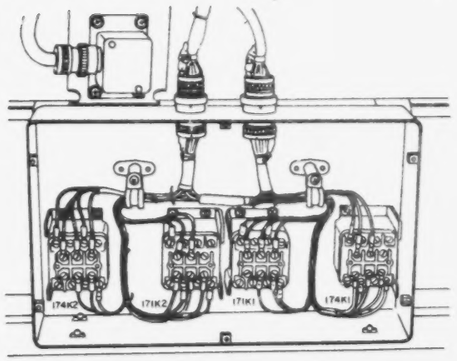


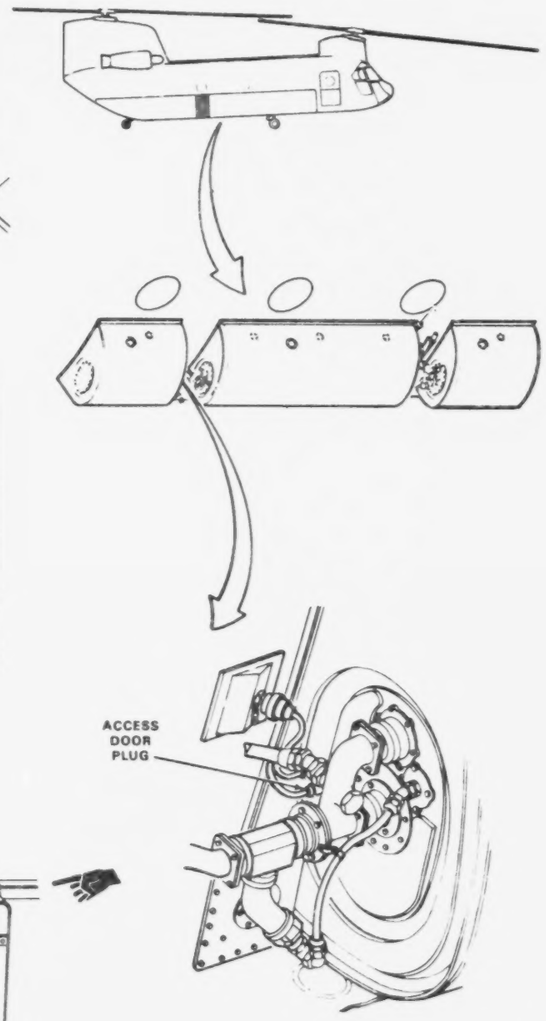
NO 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT





FUEL PUMP THERMISTOR CONTROL





NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS.

9641

END OF TASK

10-2.29 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

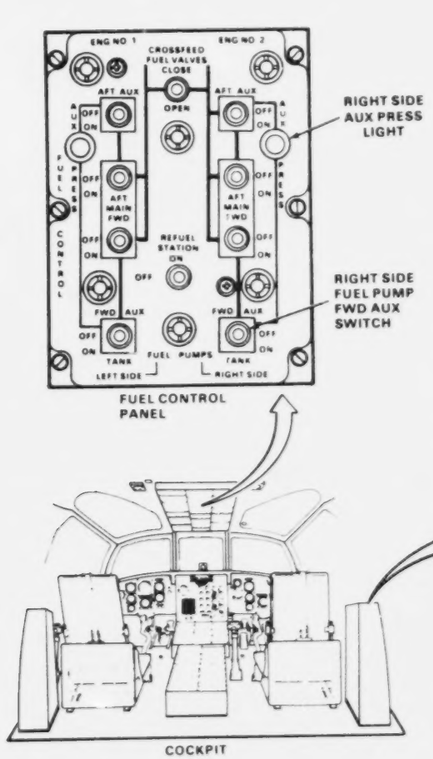
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

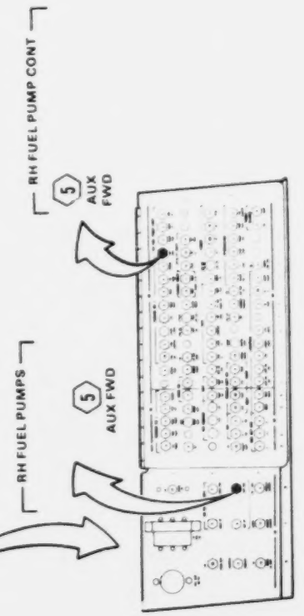
Materials:
None

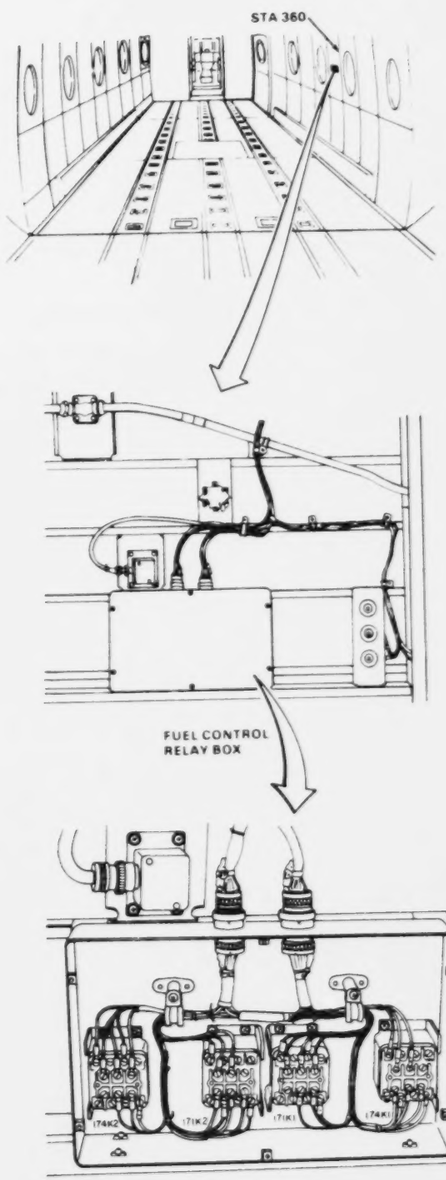
Personnel Required:
Aircraft Electrician (2)

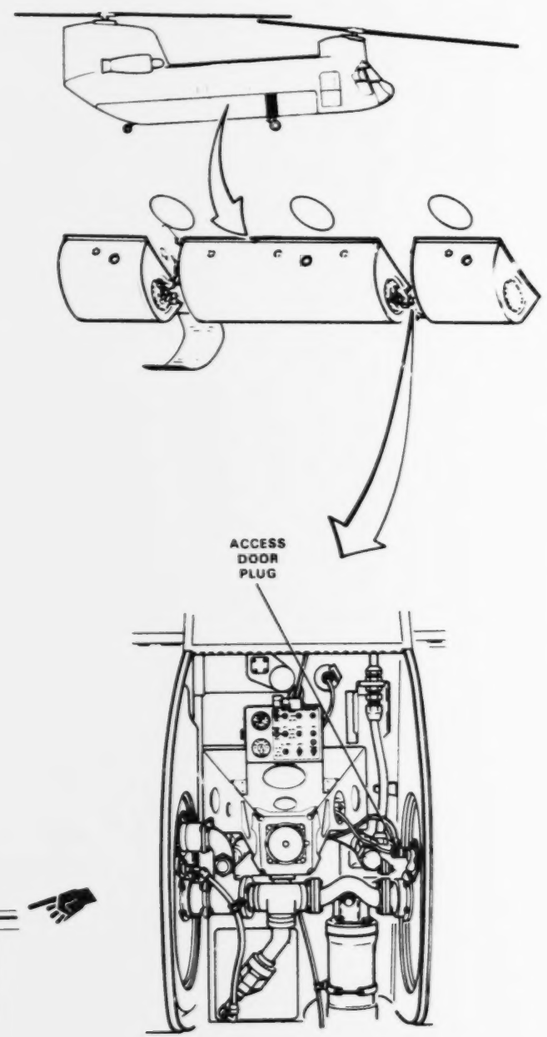
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Side Acoustical Blanket Removed Between Sta 320 and 360
Right Forward Landing Gear Access Panel Open









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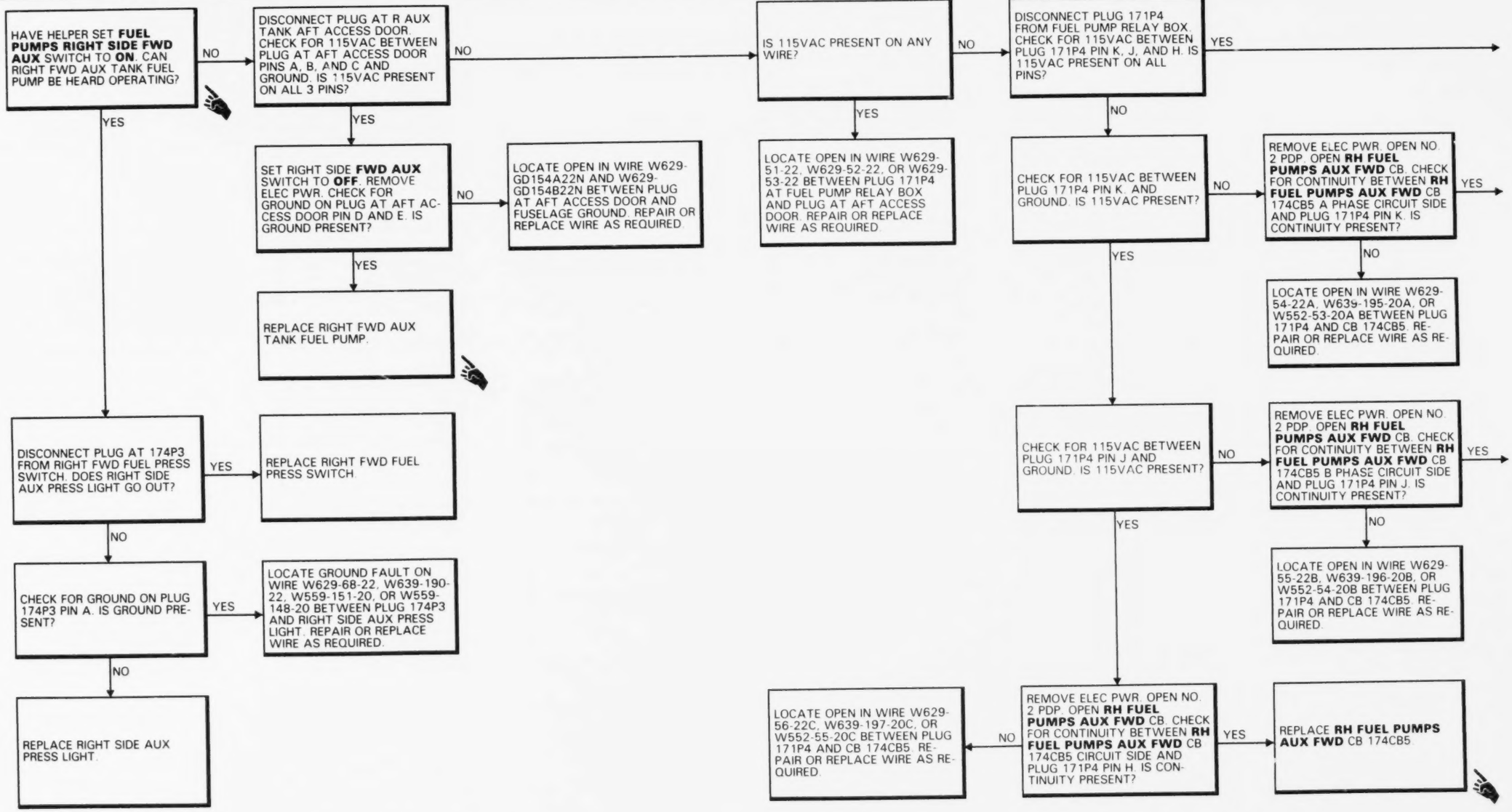
10-2.29 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


HAVE HELPER SET **FUEL PUMPS RIGHT SIDE FWD AUX** SWITCH TO **ON**. CAN RIGHT FWD AUX TANK FUEL PUMP BE HEARD OPERATING?
NO
YES
DISCONNECT PLUG AT R AUX TANK AFT ACCESS DOOR. CHECK FOR 115VAC BETWEEN PLUG AT AFT ACCESS DOOR PINS A, B, AND C AND GROUND. IS 115VAC PRESENT ON ALL 3 PINS?
NO
YES
SET RIGHT SIDE **FWD AUX** SWITCH TO **OFF**. REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG AT AFT ACCESS DOOR PIN D AND E. IS GROUND PRESENT?
NO
YES
LOCATE OPEN IN WIRE W629-GD154A22N AND W629-GD154B22N BETWEEN PLUG AT AFT ACCESS DOOR AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE RIGHT FWD AUX TANK FUEL PUMP.
IS 115VAC PRESENT ON ANY WIRE?
NO
YES
LOCATE OPEN IN WIRE W629-51-22, W629-52-22, OR W629-53-22 BETWEEN PLUG 171P4 AT FUEL PUMP RELAY BOX AND PLUG AT AFT ACCESS DOOR. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 171P4 FROM FUEL PUMP RELAY BOX. CHECK FOR 115VAC BETWEEN PLUG 171P4 PIN K, J, AND H. IS 115VAC PRESENT ON ALL PINS?
YES
NO
CHECK FOR 115VAC BETWEEN PLUG 171P4 PIN K AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS AUX FWD** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS AUX FWD** CB 174CB5 A PHASE CIRCUIT SIDE AND PLUG 171P4 PIN K. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-54-22A, W639-195-20A, OR W552-53-20A BETWEEN PLUG 171P4 AND CB 174CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 115VAC BETWEEN PLUG 171P4 PIN J AND GROUND. IS 115VAC PRESENT?
NO
YES
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS AUX FWD** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS AUX FWD** CB 174CB5 B PHASE CIRCUIT SIDE AND PLUG 171P4 PIN J. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-55-22B, W639-196-20B, OR W552-54-20B BETWEEN PLUG 171P4 AND CB 174CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN **RH FUEL PUMPS AUX FWD** CB. CHECK FOR CONTINUITY BETWEEN **RH FUEL PUMPS AUX FWD** CB 174CB5 CIRCUIT SIDE AND PLUG 171P4 PIN H. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN WIRE W629-56-22C, W639-197-20C, OR W552-55-20C BETWEEN PLUG 171P4 AND CB 174CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE **RH FUEL PUMPS AUX FWD** CB 174CB5.
DISCONNECT PLUG AT 174P3 FROM RIGHT FWD FUEL PRESS SWITCH. DOES RIGHT SIDE AUX PRESS LIGHT GO OUT?
YES
NO
REPLACE RIGHT FWD FUEL PRESS SWITCH.
CHECK FOR GROUND ON PLUG 174P3 PIN A. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W629-68-22, W639-190-22, W559-151-20, OR W559-148-20 BETWEEN PLUG 174P3 AND RIGHT SIDE AUX PRESS LIGHT. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE RIGHT SIDE AUX PRESS LIGHT.

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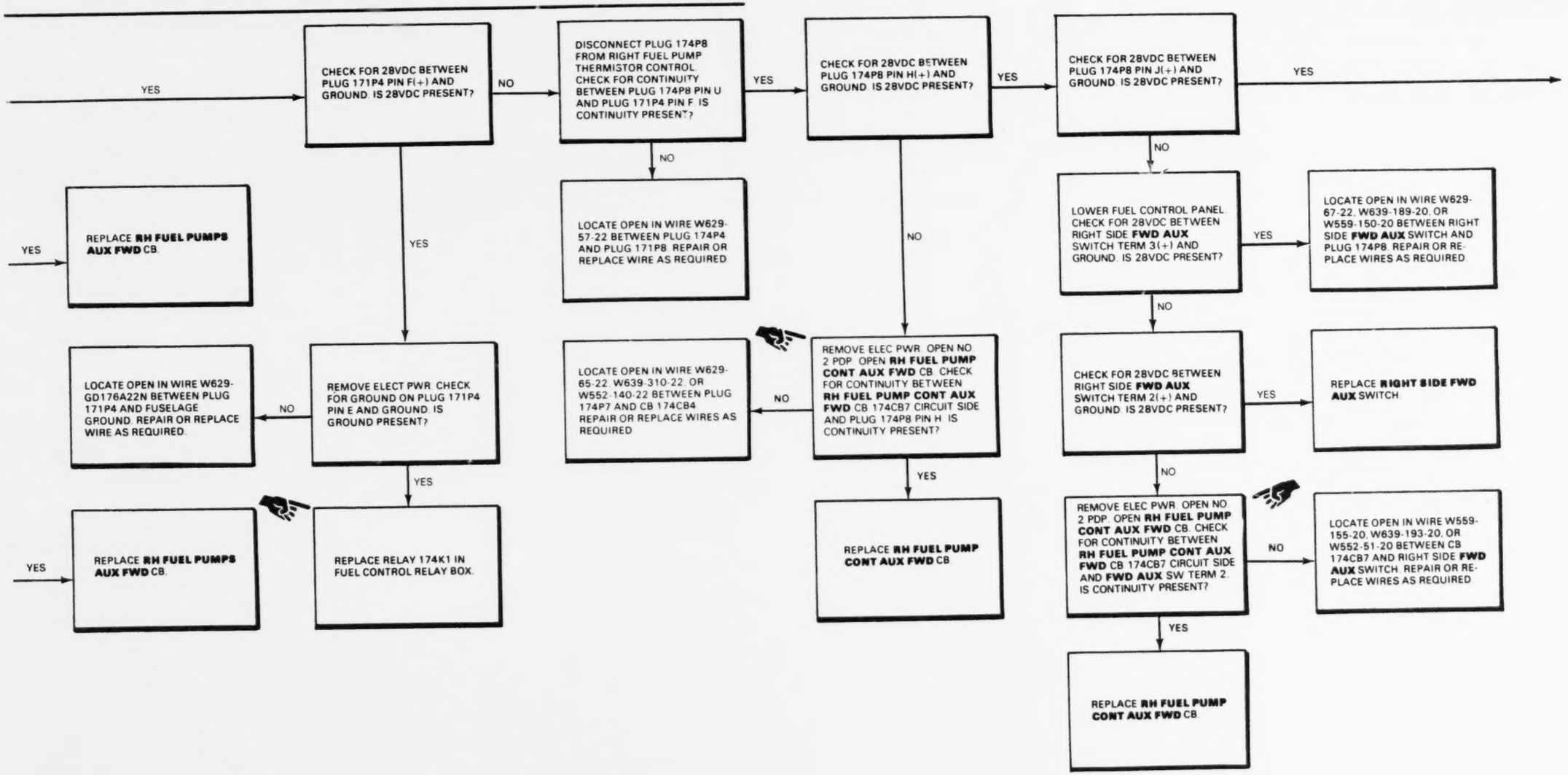
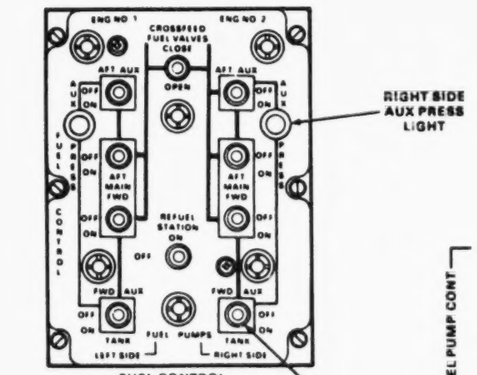
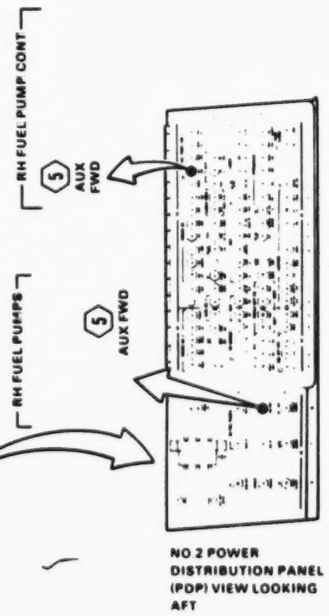
10-2.29 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)

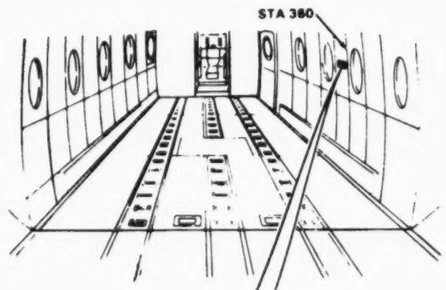

YES
CHECK FOR 28VDC BETWEEN PLUG 171P4 PIN F(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT PLUG 174P8 FROM RIGHT FUEL PUMP THERMISTOR CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 174P8 PIN U AND PLUG 171P4 PIN F. IS CONTINUITY PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P8 PIN H(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 174P8 PIN J(+) AND GROUND. IS 28VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-57-22 BETWEEN PLUG 174P4 AND PLUG 171P8. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE RH FUEL PUMPS AUX FWD CB.
YES
NO
LOWER FUEL CONTROL PANEL. CHECK FOR 28VDC BETWEEN RIGHT SIDE FWD AUX SWITCH TERM 3(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W629-67-22, W639-189-20, OR W559-150-20 BETWEEN RIGHT SIDE FWD AUX SWITCH AND PLUG 174P8. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
LOCATE OPEN IN WIRE W629-GD176A22N BETWEEN PLUG 171P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELECT PWR. CHECK FOR GROUND ON PLUG 171P4 PIN E AND GROUND. IS GROUND PRESENT?
YES
LOCATE OPEN IN WIRE W629-65-22, W639-310-22, OR W552-140-22 BETWEEN PLUG 174P7 AND CB 174CB4. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN RH FUEL PUMP CONT AUX FWD CB. CHECK FOR CONTINUITY BETWEEN RH FUEL PUMP CONT AUX FWD CB 174CB7 CIRCUIT SIDE AND PLUG 174P8 PIN H. IS CONTINUITY PRESENT?
YES
CHECK FOR 28VDC BETWEEN RIGHT SIDE FWD AUX SWITCH TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE RIGHT SIDE FWD AUX SWITCH.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. OPEN RH FUEL PUMP CONT AUX FWD CB. CHECK FOR CONTINUITY BETWEEN RH FUEL PUMP CONT AUX FWD CB 174CB7 CIRCUIT SIDE AND FWD AUX SW TERM 2. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W559-155-20, W639-193-20, OR W552-51-20 BETWEEN CB 174CB7 AND RIGHT SIDE FWD AUX SWITCH. REPAIR OR REPLACE WIRES AS REQUIRED.
YES
REPLACE RH FUEL PUMP CONT AUX FWD CB.
YES
REPLACE RELAY 174K1 IN FUEL CONTROL RELAY BOX.
YES
REPLACE RH FUEL PUMPS AUX FWD CB.
REPLACE RH FUEL PUMP CONT AUX FWD CB.

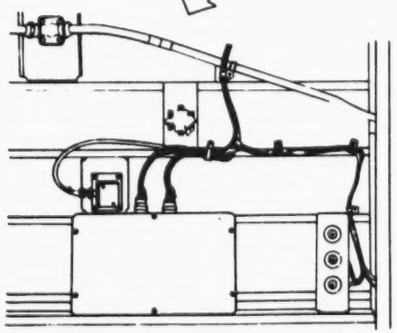
GO TO NEXT PAGE

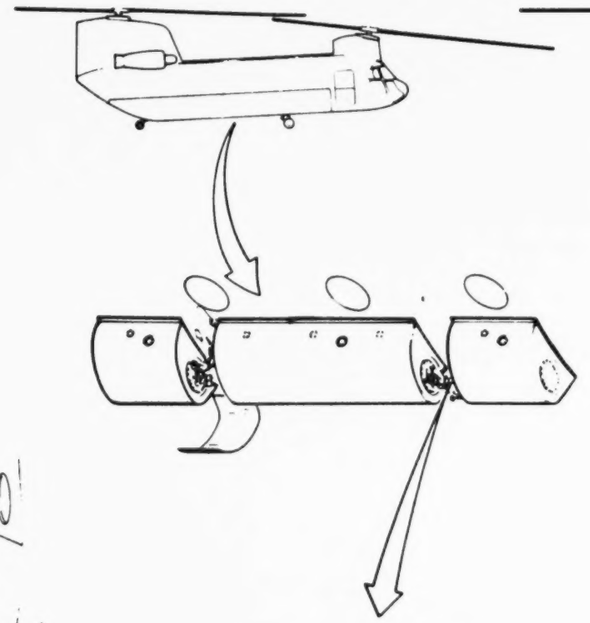
10-2.29 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)

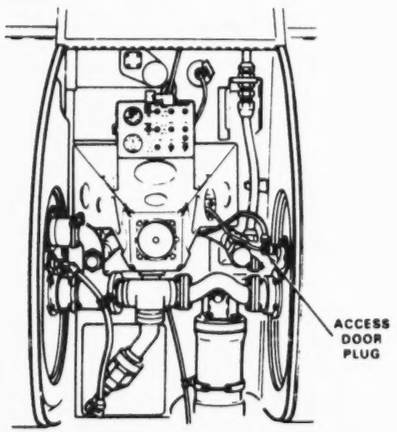












NOTE
CONNECTOR INSTALLATION IS SIMILAR FOR ALL TANK ACCESS PANELS

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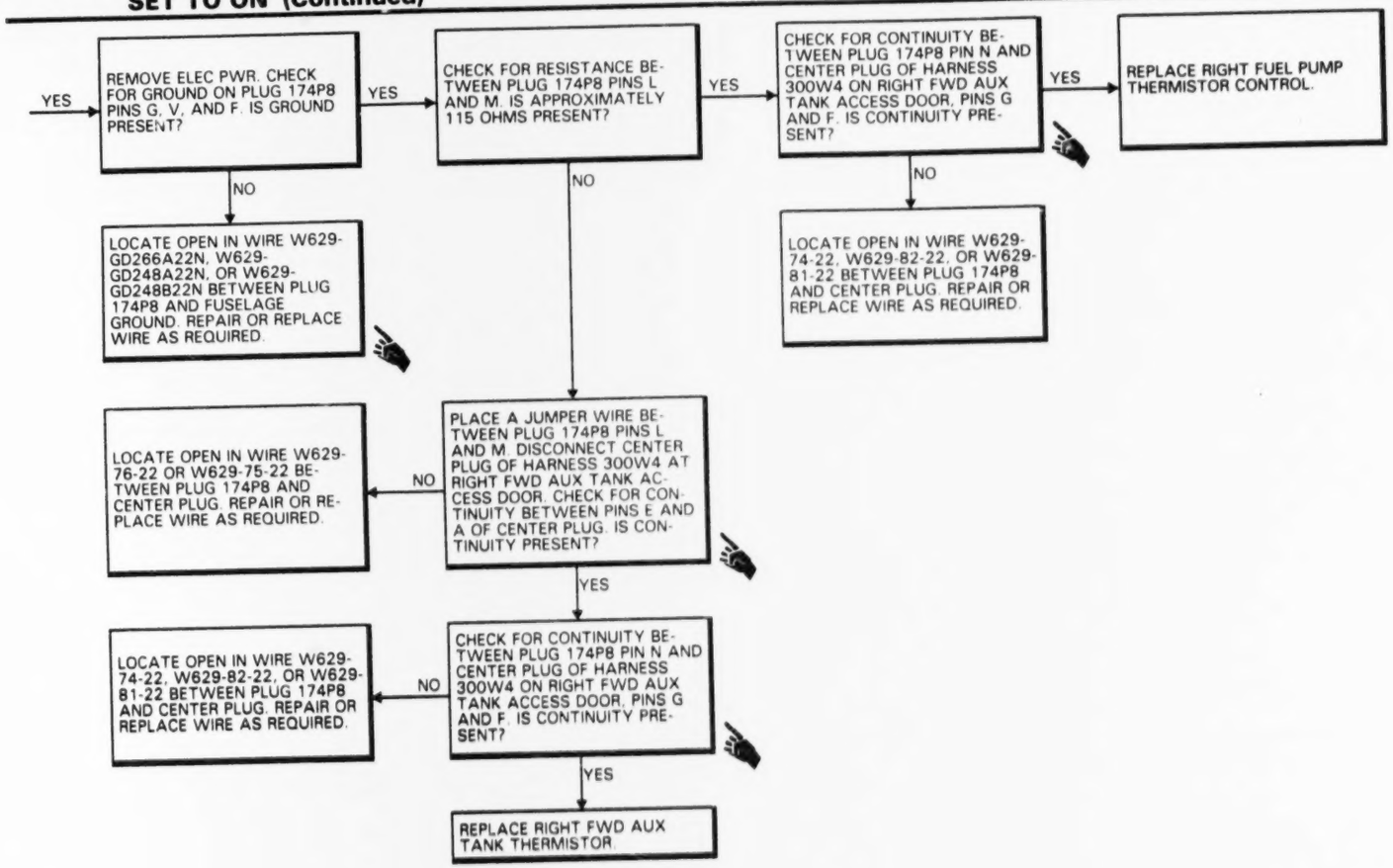
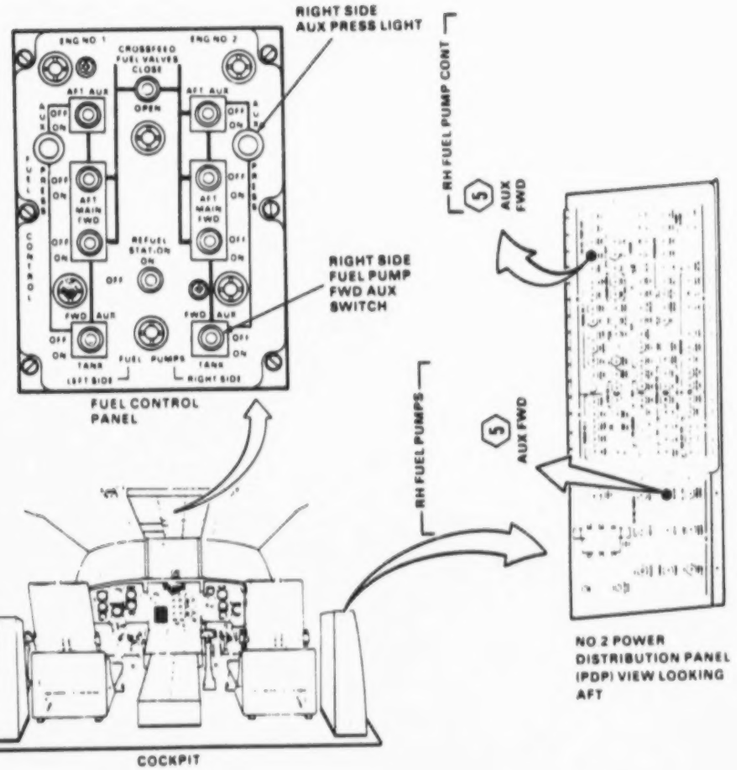
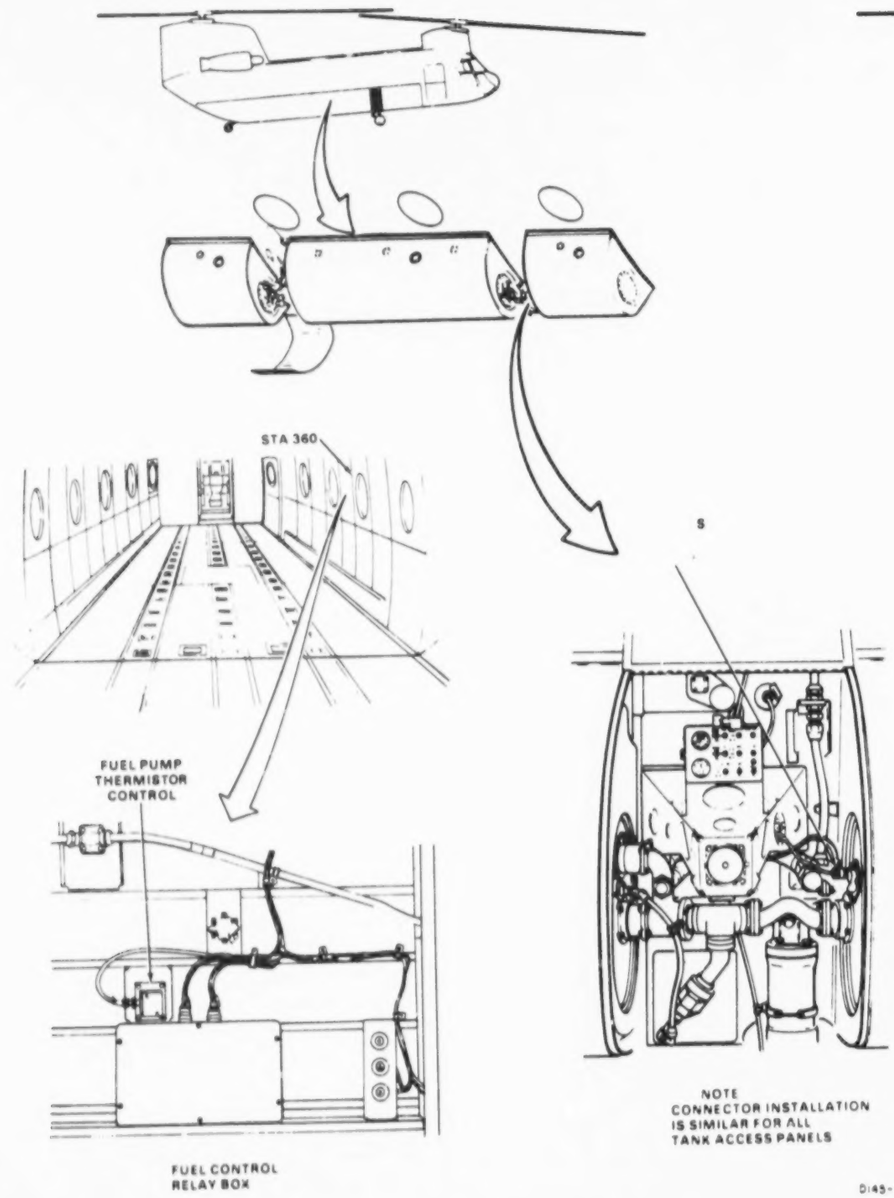
10-2.29 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)


REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG 174P8 PINS G, V, AND F. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W629-GD266A22N, W629-GD248A22N, OR W629-GD248B22N BETWEEN PLUG 174P8 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR RESISTANCE BETWEEN PLUG 174P8 PINS L AND M. IS APPROXIMATELY 115 OHMS PRESENT?
YES
NO
CHECK FOR CONTINUITY BETWEEN PLUG 174P8 PIN N AND CENTER PLUG OF HARNESS 300W4 ON RIGHT FWD AUX TANK ACCESS DOOR, PINS G AND F. IS CONTINUITY PRESENT?
YES
NO
REPLACE RIGHT FUEL PUMP THERMISTOR CONTROL.
LOCATE OPEN IN WIRE W629-74-22, W629-82-22, OR W629-81-22 BETWEEN PLUG 174P8 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
PLACE A JUMPER WIRE BETWEEN PLUG 174P8 PINS L AND M. DISCONNECT CENTER PLUG OF HARNESS 300W4 AT RIGHT FWD AUX TANK ACCESS DOOR. CHECK FOR CONTINUITY BETWEEN PINS E AND A OF CENTER PLUG. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN WIRE W629-76-22 OR W629-75-22 BETWEEN PLUG 174P8 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 174P8 PIN N AND CENTER PLUG OF HARNESS 300W4 ON RIGHT FWD AUX TANK ACCESS DOOR, PINS G AND F. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN WIRE W629-74-22, W629-82-22, OR W629-81-22 BETWEEN PLUG 174P8 AND CENTER PLUG. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE RIGHT FWD AUX TANK THERMISTOR.

GO TO NEXT PAGE

10-2.29 RIGHT SIDE AUX PRESS LIGHT COMES ON WHEN RIGHT SIDE FWD AUX FUEL PUMP SWITCH IS SET TO ON (Continued)





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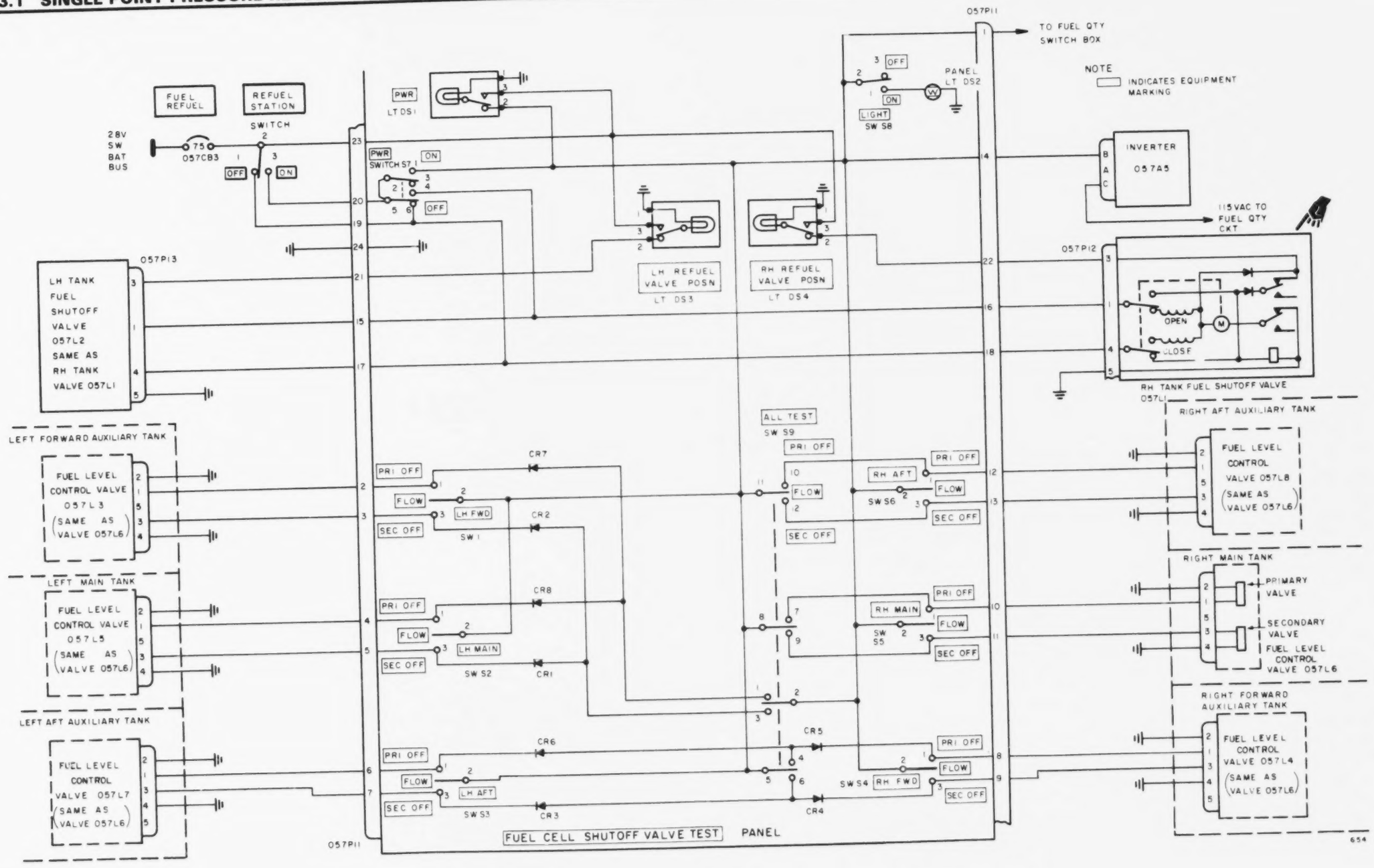
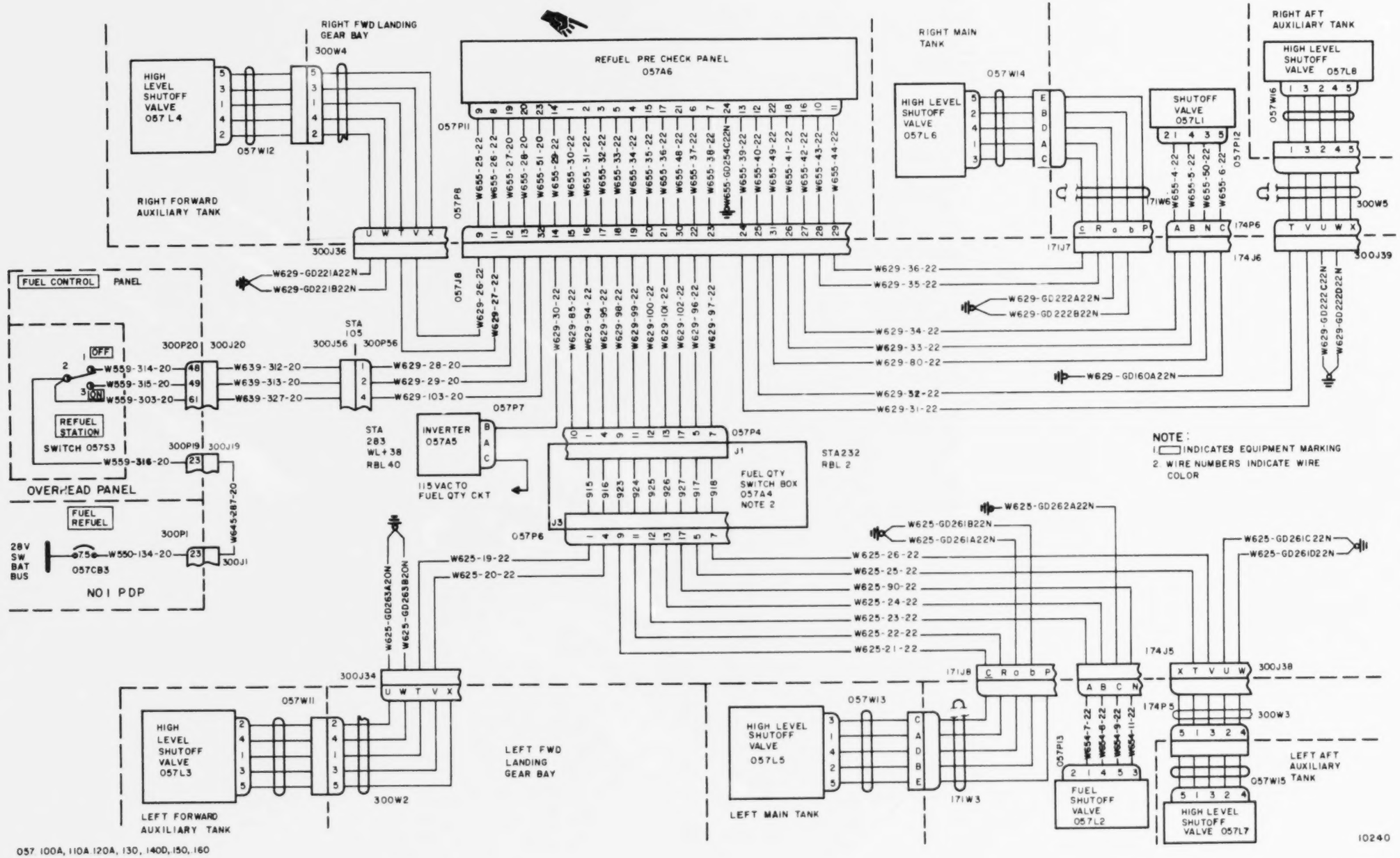
END OF TASK

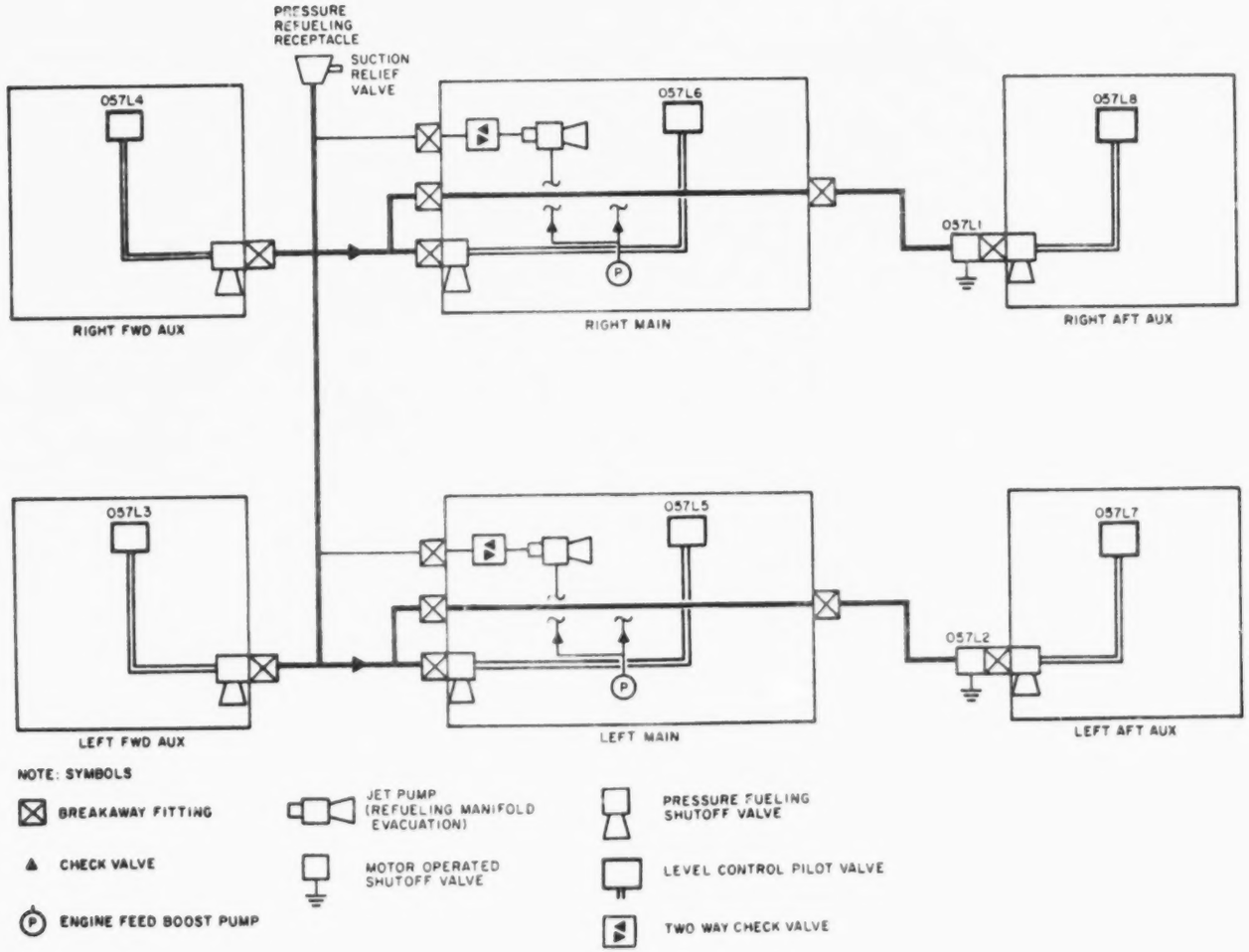
10-3 SINGLE POINT PRESSURE REFUELING SYSTEM

10-3.1 SINGLE POINT PRESSURE REFUELING SYSTEM SCHEMATIC



10-3.2 SINGLE POINT PRESSURE REFUELING SYSTEM WIRING DIAGRAM





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END OF TASK

10-3.3 SINGLE POINT PRESSURE REFUELING SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

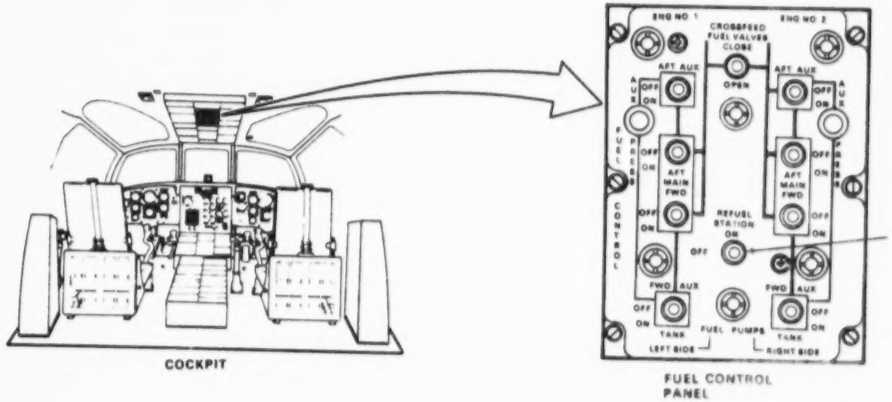
Personnel Required:
Aircraft Electrician

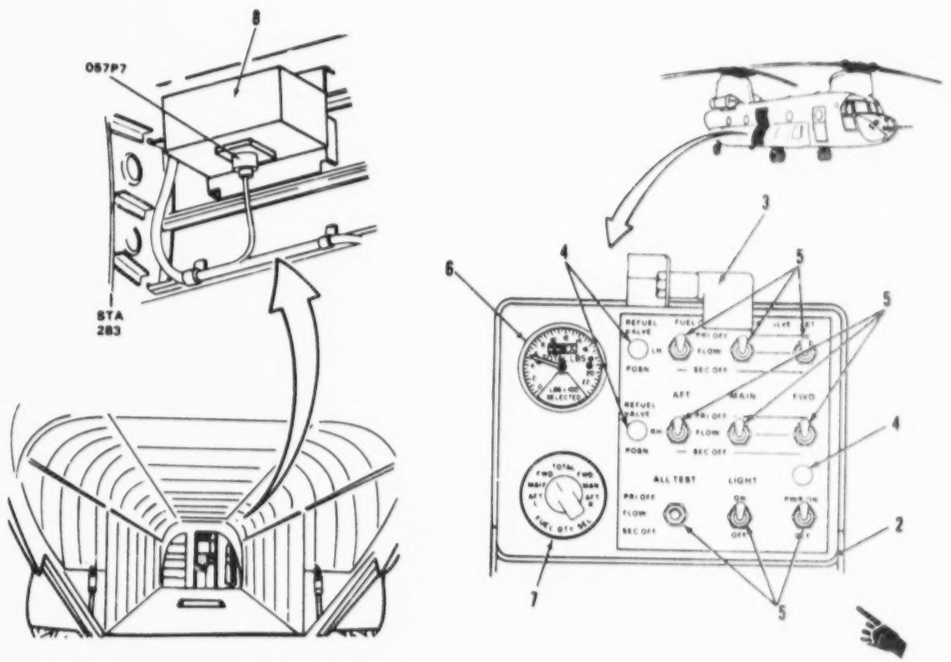
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Electrical Power Off
Battery Disconnected
Hydraulic Power Off
Forward Right Landing Gear Access Panel Open

TASK	RESULT
1. **Check REFUEL STATION switch (1).**	If switch (1) is loose or damaged, tighten or replace it as required.
2. **Check pre-check panel (2).**	If panel (2) is loose or damaged, tighten, repair, or replace it as required.
3. **Check light (3).**	If light (3) is loose or damaged, tighten or replace it as required.
4. **Check three lights (4).**	If any light (4) is damaged, repair or replace it as required.
5. **Check nine switches (5).**	If any switch (5) is loose or damaged, tighten or replace it as required.
6. **Check fuel quantity indicator (6).**	If indicator (6) is loose or damaged, tighten or replace it as required.
7. **Check fuel quantity selector switch (7).**	If switch (7) is loose or damaged, tighten or replace it as required.
8. **Check inverter (8).**	If inverter (8) is loose or damaged, tighten or replace it as required.

FOLLOW-ON MAINTENANCE:
None





END OF TASK

10-3.4 SINGLE POINT PRESSURE REFUELING SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23

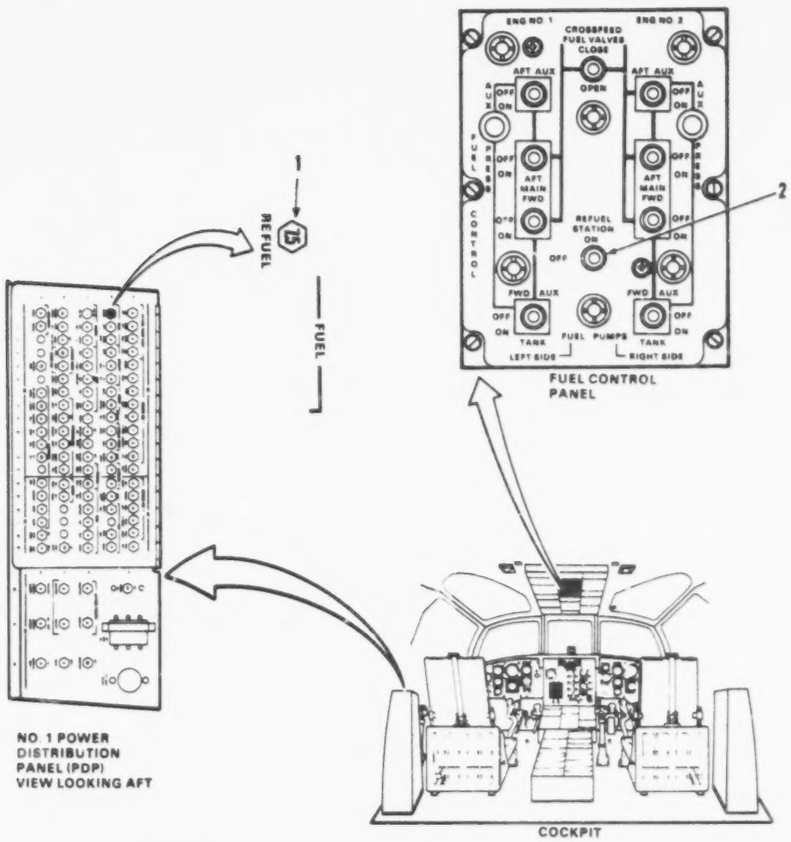
Equipment Condition:
TM 55-1520-240-23:
Electrical Power Off
Battery Connected
Hydraulic Power Off
Visual Check of Single Point Pressure Refueling System Performed (Task 10-3.3)

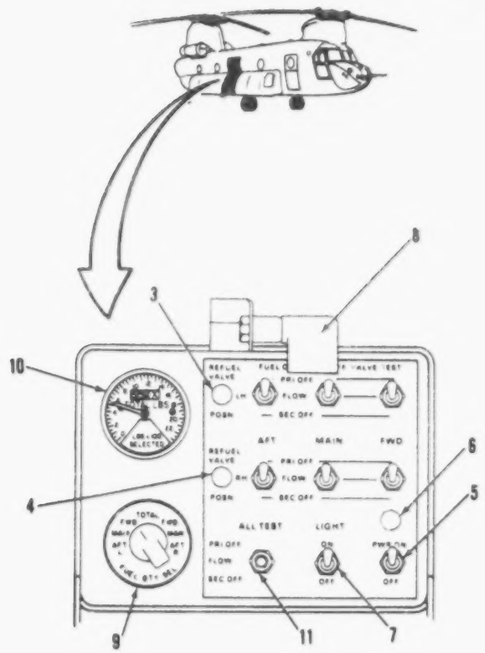
TASK	RESULT
1. **Check** that **FUEL REFUEL circuit breaker (1)** is closed.	If circuit breaker (1) is open, close it. If it opens again, go to task 10-3.5.
2. **Set REFUEL STATION switch (2) to ON.**	
3. **Check LH REFUEL VALVE POSN and RH REFUEL VALVE POSN lights (3 and 4).**	Both lights (3 and 4) shall be out. If either light is on, go to task 10-3.6.
4. **Press and release LH REFUEL VALVE POSN and RH REFUEL VALVE POSN lights (3 and 4).**	Both lights (3 and 4) shall momentarily come on. If either light does not come on, go to task 10-3.7.
5. **Set PWR switch (5) to ON.**	Light (6) shall come on. LH REFUEL VALVE POSN and RH REFUEL VALVE POSN lights (3 and 4) shall come on and go out. If light (6) does not come on, go to task 10-3.8. If either (3 or 4) does not come on, go to task 10-3.9. If either light comes on and stays on, go to task 10-3.6.
6. **Set LIGHT switch (7) to ON.**	Light (8) shall come on. If it does not, go to task 10-3.10.
7. **Turn FUEL QTY SEL switch (9)** through its positions.	Pointer on indicator (10) shall indicate fuel level in tank selected. If pointer does not move for any switch position, go to task 8-11.18. If pointer indicates fuel amount for all but one position, go to task 8-11.19.
8. Perform single point refueling of all tanks or individual tank as required. Refer to TM 55-1520-240-23.	**NOTE** A small amount of fuel will continue to flow thru the open primary and secondary valves when the refueling valve is closed. If fuel does not stop flowing within 4 seconds with ALL TEST switch (11) at PRI OFF, stop refueling and go to task 10-3.12. If fuel does not stop flowing within 4 seconds with ALL TEST switch (11) at SEC OFF, stop refueling and go to task 10-3.13. If during initial single tank refueling procedures, fuel begins flowing before tank is selected, stop refueling and go to task 10-3.12 or 10-3.13. If fuel does not flow in one or more tanks during single point refueling, go to task 10-3.14.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery Disconnected

GO TO NEXT PAGE

10-3.4 SINGLE POINT PRESSURE REFUELING SYSTEM OPERATIONAL CHECK (Continued)





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END OF TASK

10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

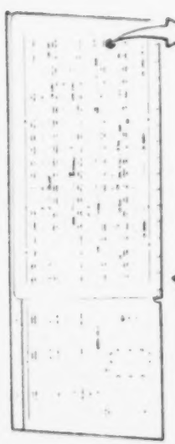
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

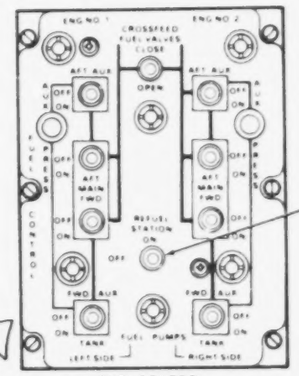
Personnel Required:
67U10 Medium Helicopter Repairer
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

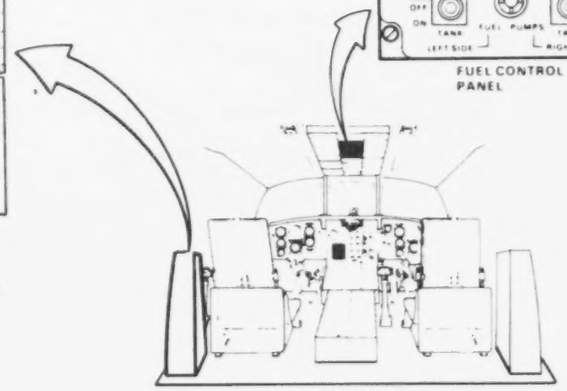
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



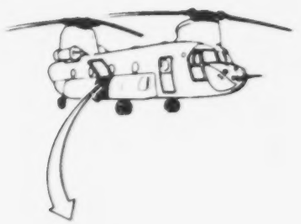
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

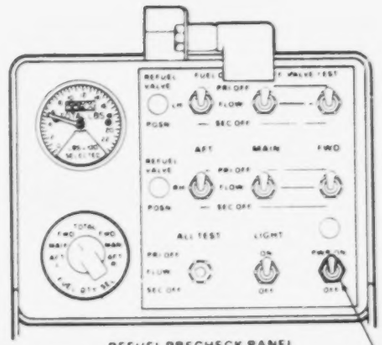


FUEL CONTROL PANEL



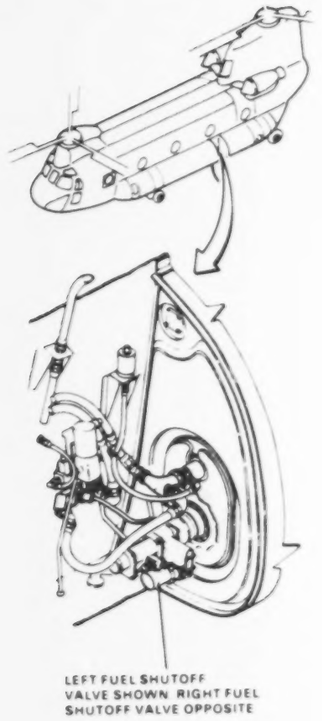
COCKPIT



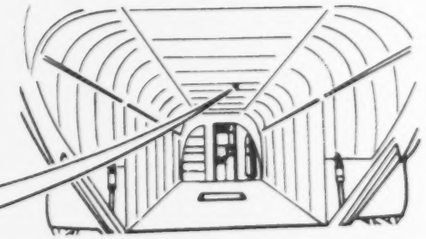


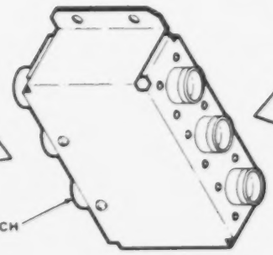
REFUEL PRECHECK PANEL

PWR SWITCH



LEFT FUEL SHUTOFF VALVE SHOWN. RIGHT FUEL SHUTOFF VALVE OPPOSITE





FORWARD

FUEL QUANTITY SWITCH BOX STA 232

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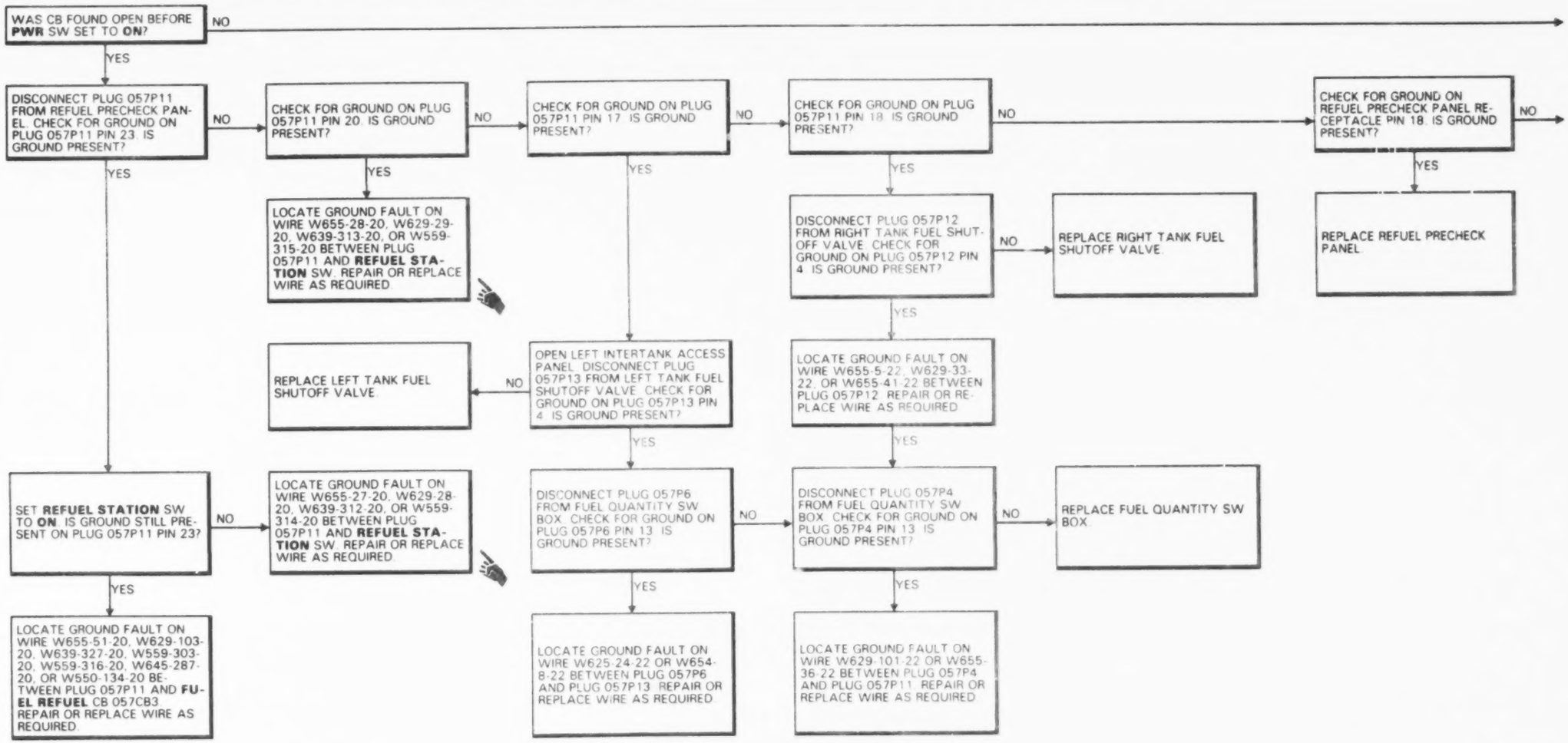
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


WAS CB FOUND OPEN BEFORE **PWR** SW SET TO **ON**?
NO
YES
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR GROUND ON PLUG 057P11 PIN 23. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 20. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W655-28-20, W629-29-20, W639-313-20, OR W559-315-20 BETWEEN PLUG 057P11 AND **REFUEL STATION** SW. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 057P11 PIN 17. IS GROUND PRESENT?
NO
YES
OPEN LEFT INTERTANK ACCESS PANEL. DISCONNECT PLUG 057P13 FROM LEFT TANK FUEL SHUTOFF VALVE. CHECK FOR GROUND ON PLUG 057P13 PIN 4. IS GROUND PRESENT?
NO
REPLACE LEFT TANK FUEL SHUTOFF VALVE.
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 13. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W625-24-22 OR W654-8-22 BETWEEN PLUG 057P6 AND PLUG 057P13. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 057P11 PIN 18. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG 057P12 FROM RIGHT TANK FUEL SHUTOFF VALVE. CHECK FOR GROUND ON PLUG 057P12 PIN 4. IS GROUND PRESENT?
NO
REPLACE RIGHT TANK FUEL SHUTOFF VALVE.
YES
LOCATE GROUND FAULT ON WIRE W655-5-22, W629-33-22, OR W655-41-22 BETWEEN PLUG 057P12. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P4 PIN 13. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SW BOX.
YES
LOCATE GROUND FAULT ON WIRE W629-101-22 OR W655-36-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON REFUEL PRECHECK PANEL RECEPTACLE PIN 18. IS GROUND PRESENT?
NO
YES
REPLACE REFUEL PRECHECK PANEL.
SET **REFUEL STATION** SW TO **ON**. IS GROUND STILL PRESENT ON PLUG 057P11 PIN 23?
NO
YES
LOCATE GROUND FAULT ON WIRE W655-27-20, W629-28-20, W639-312-20, OR W559-314-20 BETWEEN PLUG 057P11 AND **REFUEL STATION** SW. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W655-51-20, W629-103-20, W639-327-20, W559-303-20, W559-316-20, W645-287-20, OR W550-134-20 BETWEEN PLUG 057P11 AND **FUEL REFUEL** CB 057CB3. REPAIR OR REPLACE WIRE AS REQUIRED.

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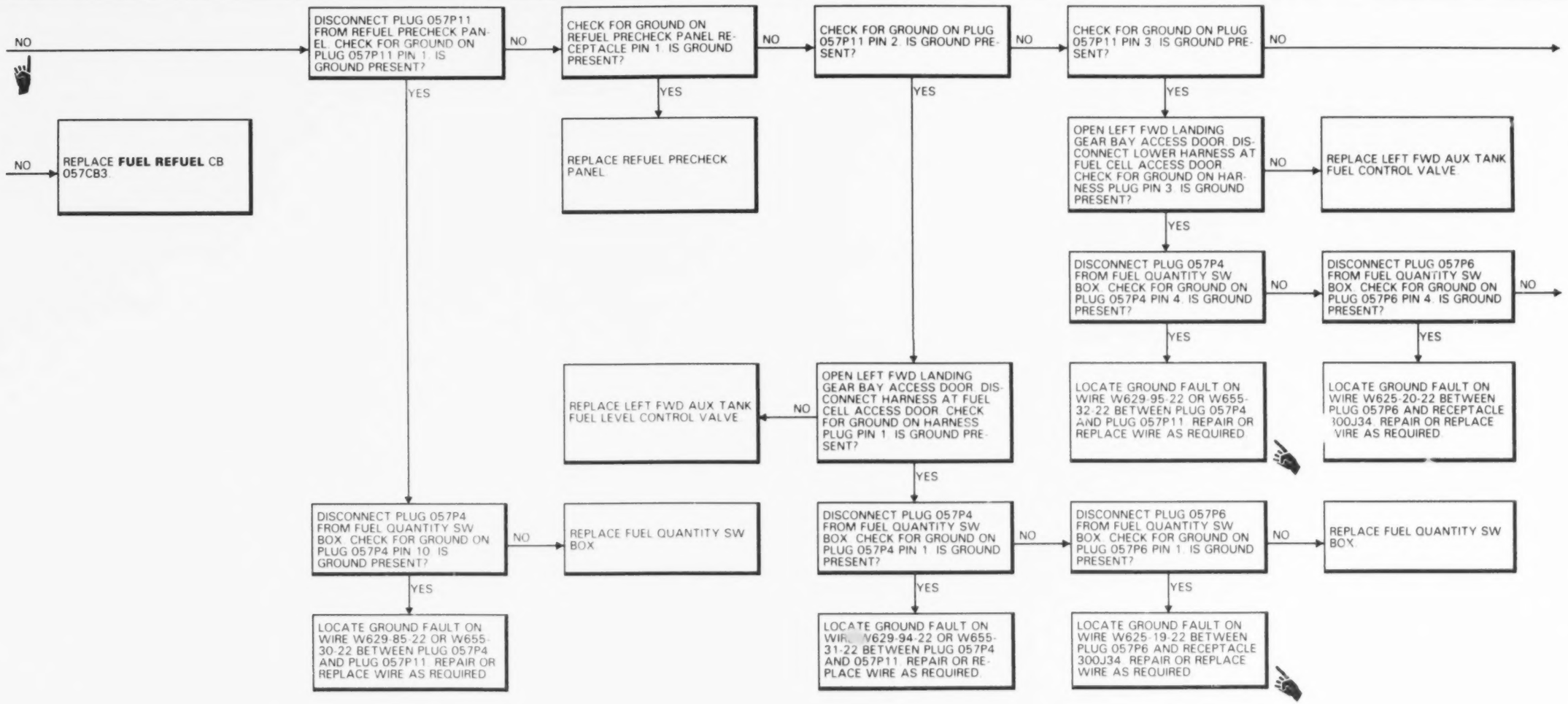
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


NO
REPLACE **FUEL REFUEL** CB 057CB3.
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR GROUND ON PLUG 057P11 PIN 1. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON REFUEL PRECHECK PANEL RECEPTACLE PIN 1. IS GROUND PRESENT?
NO
YES
REPLACE REFUEL PRECHECK PANEL.
CHECK FOR GROUND ON PLUG 057P11 PIN 2. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 3. IS GROUND PRESENT?
NO
YES
OPEN LEFT FWD LANDING GEAR BAY ACCESS DOOR. DISCONNECT LOWER HARNESS AT FUEL CELL ACCESS DOOR. CHECK FOR GROUND ON HARNESS PLUG PIN 3. IS GROUND PRESENT?
NO
REPLACE LEFT FWD AUX TANK FUEL CONTROL VALVE.
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P4 PIN 4. IS GROUND PRESENT?
NO
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 4. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W629-95-22 OR W655-32-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W625-20-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J34. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN LEFT FWD LANDING GEAR BAY ACCESS DOOR. DISCONNECT HARNESS AT FUEL CELL ACCESS DOOR. CHECK FOR GROUND ON HARNESS PLUG PIN 1. IS GROUND PRESENT?
NO
REPLACE LEFT FWD AUX TANK FUEL LEVEL CONTROL VALVE.
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P4 PIN 10. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SW BOX.
YES
LOCATE GROUND FAULT ON WIRE W629-85-22 OR W655-30-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P4 PIN 1. IS GROUND PRESENT?
NO
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 1. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SW BOX.
YES
LOCATE GROUND FAULT ON WIRE W629-94-22 OR W655-31-22 BETWEEN PLUG 057P4 AND 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W625-19-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J34. REPAIR OR REPLACE WIRE AS REQUIRED.

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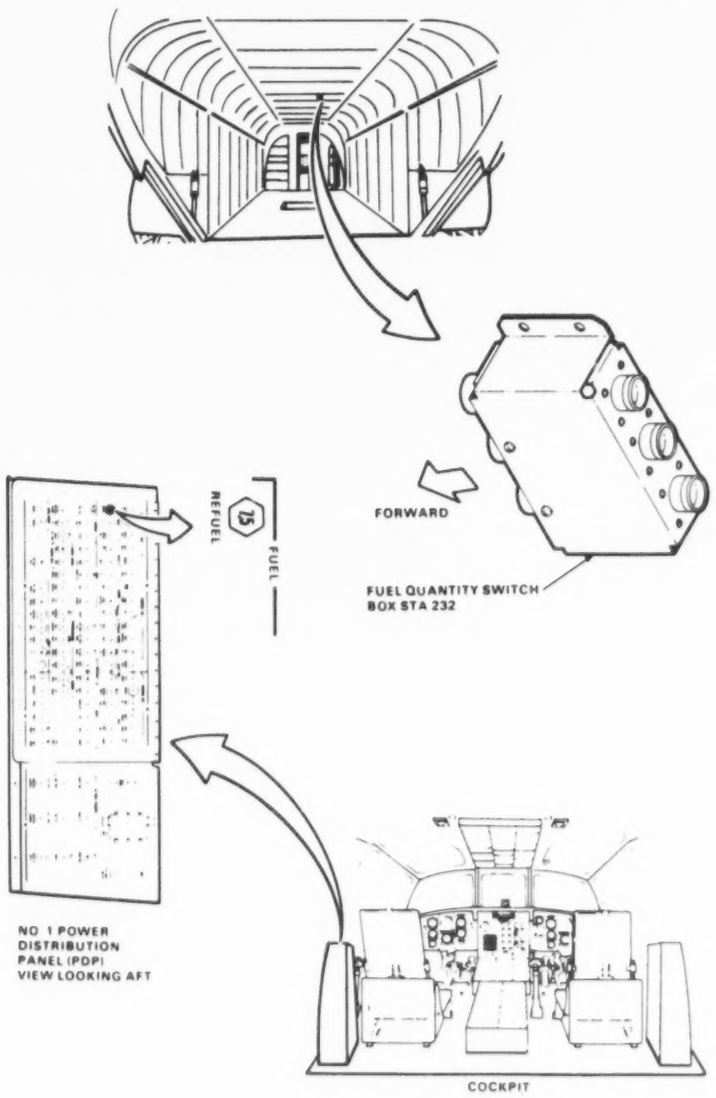
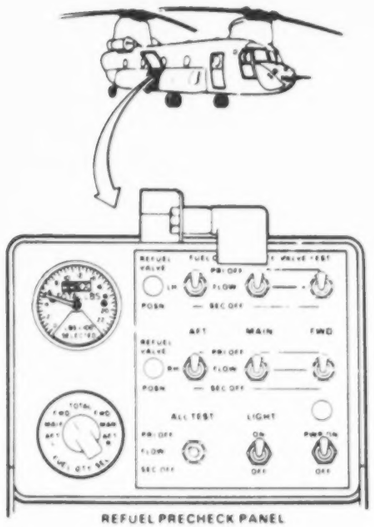
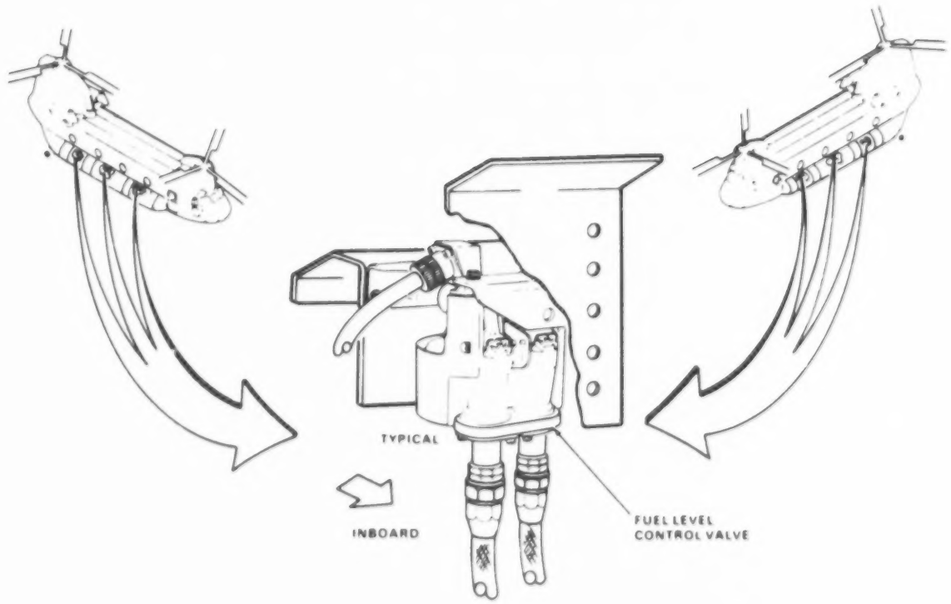
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)







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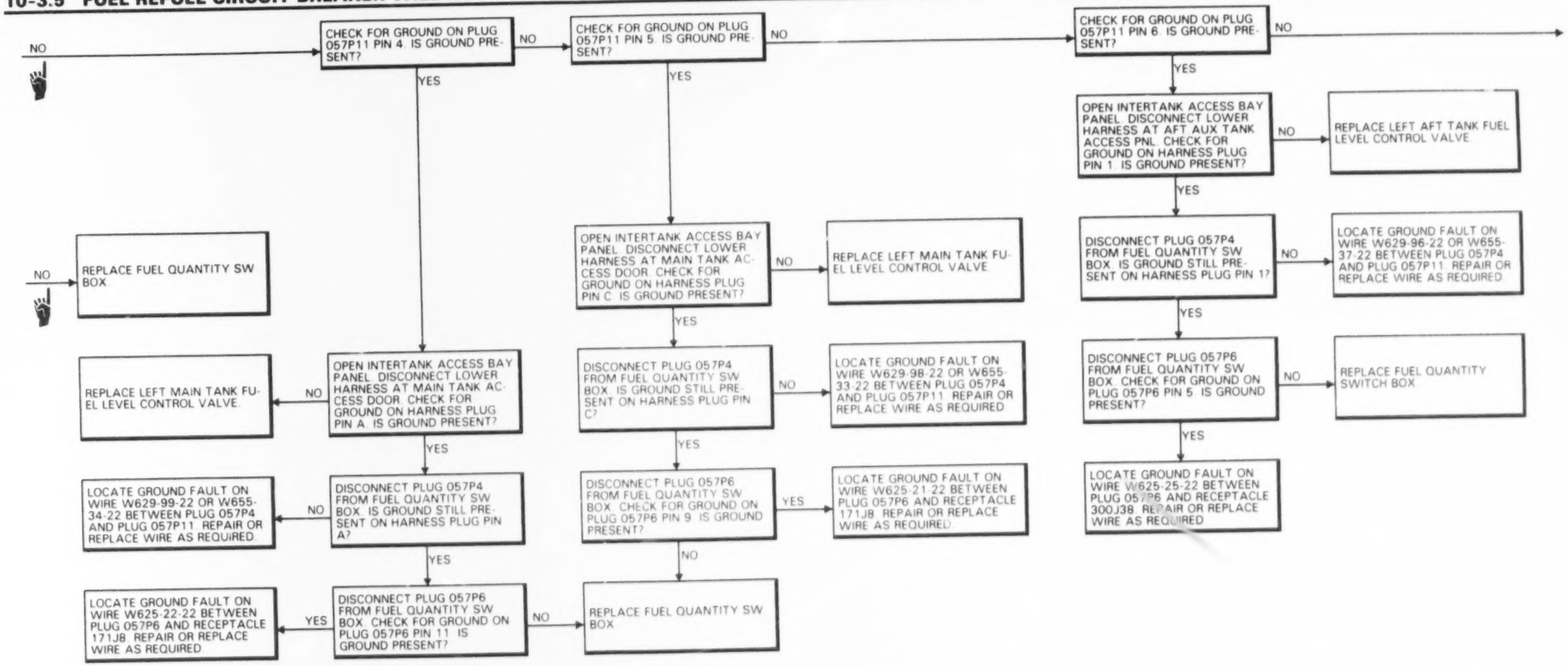
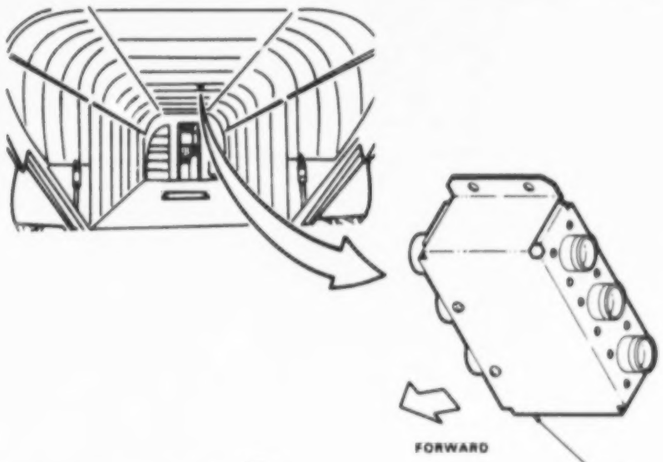
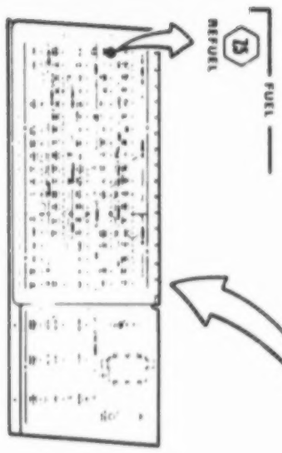
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

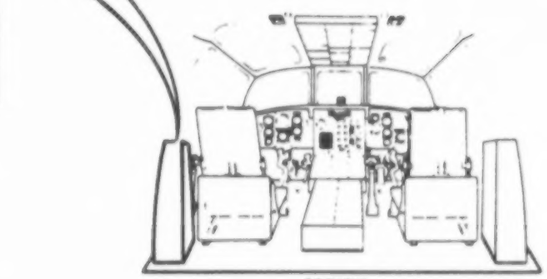

NO
CHECK FOR GROUND ON PLUG 057P11 PIN 4. IS GROUND PRESENT?
NO
CHECK FOR GROUND ON PLUG 057P11 PIN 5. IS GROUND PRESENT?
NO
CHECK FOR GROUND ON PLUG 057P11 PIN 6. IS GROUND PRESENT?
NO
YES
YES
YES
NO
REPLACE FUEL QUANTITY SW BOX
OPEN INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT MAIN TANK ACCESS DOOR. CHECK FOR GROUND ON HARNESS PLUG PIN C. IS GROUND PRESENT?
NO
REPLACE LEFT MAIN TANK FUEL LEVEL CONTROL VALVE
OPEN INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT AFT AUX TANK ACCESS PNL. CHECK FOR GROUND ON HARNESS PLUG PIN 1. IS GROUND PRESENT?
NO
REPLACE LEFT AFT TANK FUEL LEVEL CONTROL VALVE
REPLACE LEFT MAIN TANK FUEL LEVEL CONTROL VALVE
NO
OPEN INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT MAIN TANK ACCESS DOOR. CHECK FOR GROUND ON HARNESS PLUG PIN A. IS GROUND PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. IS GROUND STILL PRESENT ON HARNESS PLUG PIN C?
NO
LOCATE GROUND FAULT ON WIRE W629-98-22 OR W655-33-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. IS GROUND STILL PRESENT ON HARNESS PLUG PIN 1?
NO
LOCATE GROUND FAULT ON WIRE W629-96-22 OR W655-37-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED
YES
YES
YES
LOCATE GROUND FAULT ON WIRE W629-99-22 OR W655-34-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED
NO
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. IS GROUND STILL PRESENT ON HARNESS PLUG PIN A?
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 9. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W625-21-22 BETWEEN PLUG 057P6 AND RECEPTACLE 171J8. REPAIR OR REPLACE WIRE AS REQUIRED
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 5. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SWITCH BOX
YES
YES
YES
LOCATE GROUND FAULT ON WIRE W625-22-22 BETWEEN PLUG 057P6 AND RECEPTACLE 171J8. REPAIR OR REPLACE WIRE AS REQUIRED
NO
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 11. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SW BOX
LOCATE GROUND FAULT ON WIRE W625-25-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J38. REPAIR OR REPLACE WIRE AS REQUIRED

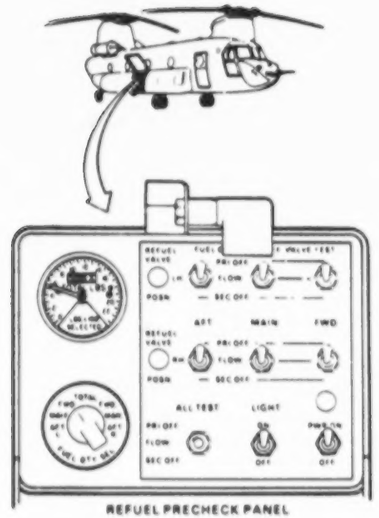
GO TO NEXT PAGE

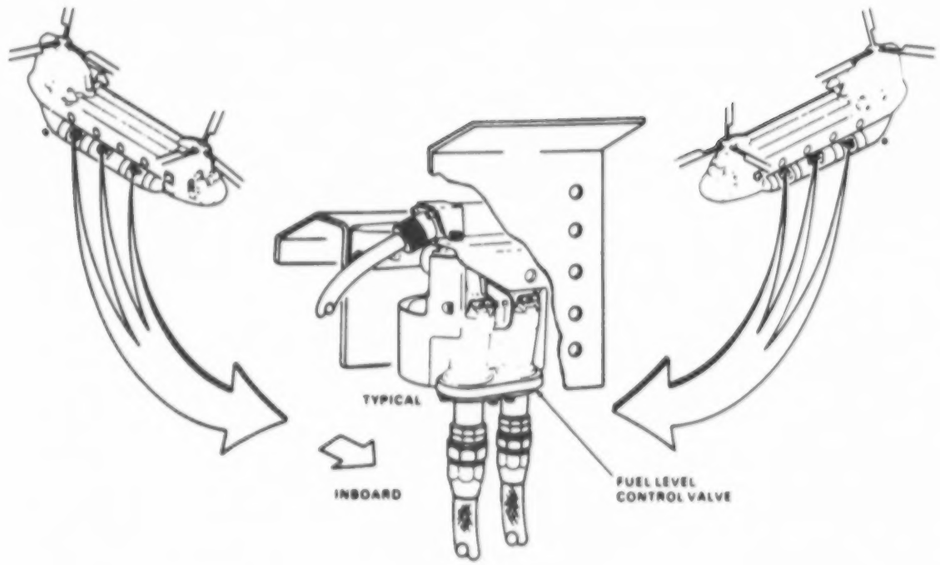
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)



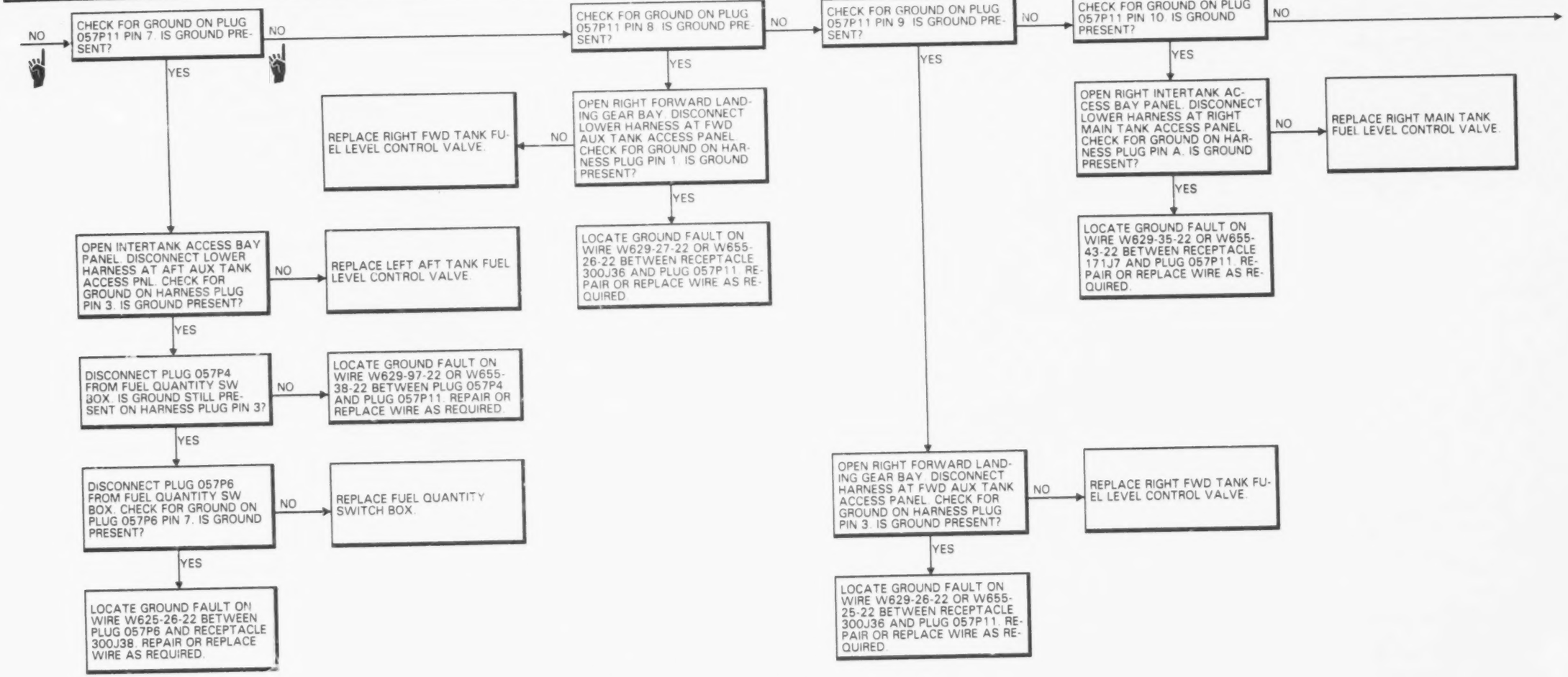








10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


CHECK FOR GROUND ON PLUG 057P11 PIN 7. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 8. IS GROUND PRESENT?
NO
YES
REPLACE RIGHT FWD TANK FUEL LEVEL CONTROL VALVE.
NO
OPEN RIGHT FORWARD LANDING GEAR BAY. DISCONNECT LOWER HARNESS AT FWD AUX TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 1. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W629-27-22 OR W655-26-22 BETWEEN RECEPTACLE 300J36 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT AFT AUX TANK ACCESS PNL. CHECK FOR GROUND ON HARNESS PLUG PIN 3. IS GROUND PRESENT?
NO
REPLACE LEFT AFT TANK FUEL LEVEL CONTROL VALVE.
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. IS GROUND STILL PRESENT ON HARNESS PLUG PIN 3?
NO
LOCATE GROUND FAULT ON WIRE W629-97-22 OR W655-38-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 7. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SWITCH BOX.
YES
LOCATE GROUND FAULT ON WIRE W625-26-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J38. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 057P11 PIN 9. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 10. IS GROUND PRESENT?
NO
YES
OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT RIGHT MAIN TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN A. IS GROUND PRESENT?
NO
REPLACE RIGHT MAIN TANK FUEL LEVEL CONTROL VALVE.
YES
LOCATE GROUND FAULT ON WIRE W629-35-22 OR W655-43-22 BETWEEN RECEPTACLE 171J7 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN RIGHT FORWARD LANDING GEAR BAY. DISCONNECT HARNESS AT FWD AUX TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 3. IS GROUND PRESENT?
NO
REPLACE RIGHT FWD TANK FUEL LEVEL CONTROL VALVE.
YES
LOCATE GROUND FAULT ON WIRE W629-26-22 OR W655-25-22 BETWEEN RECEPTACLE 300J36 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.

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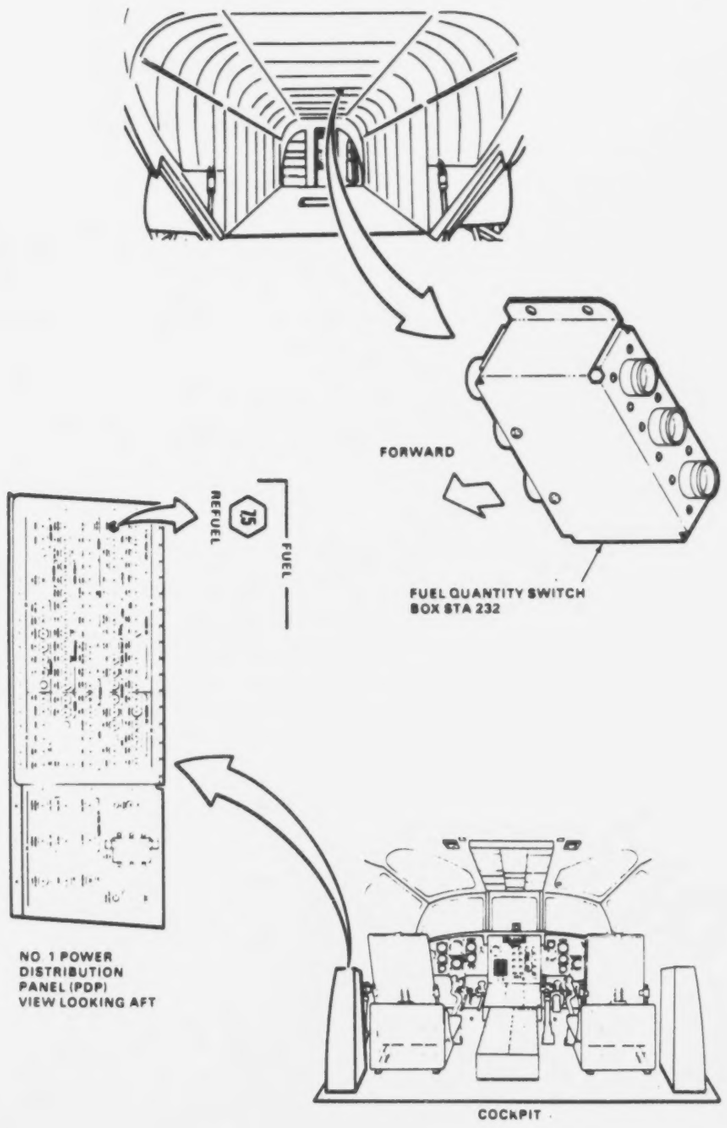
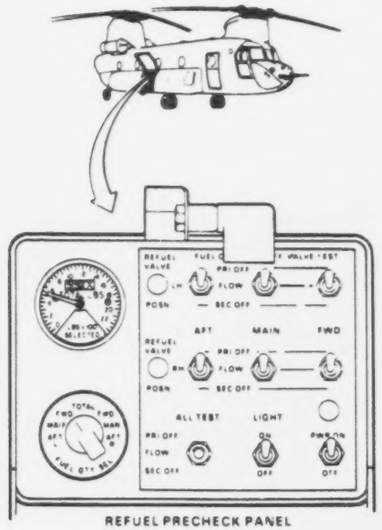
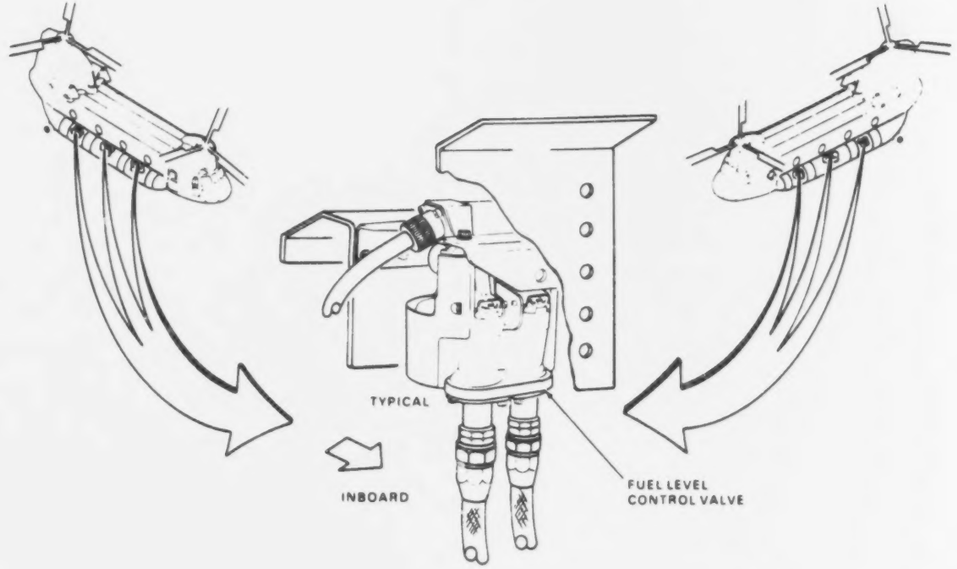
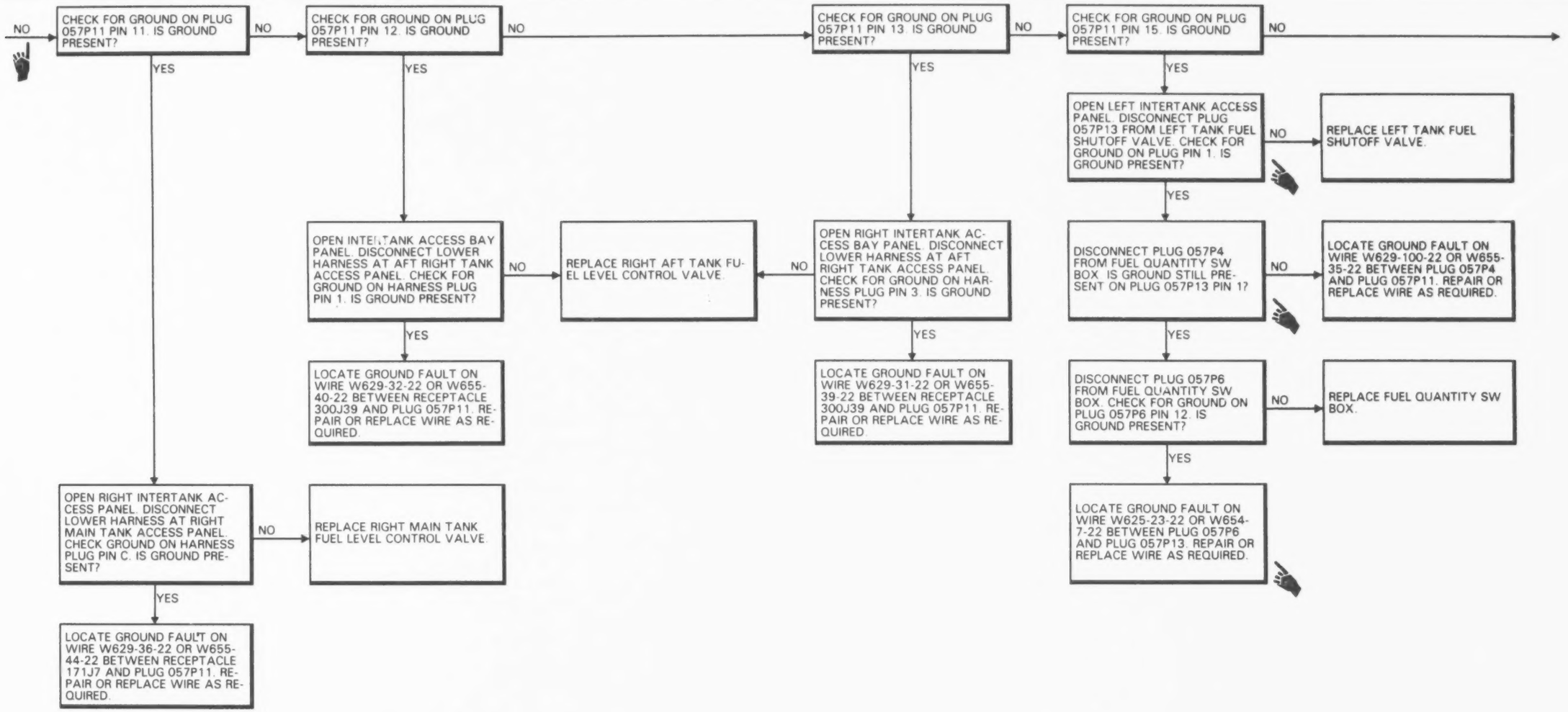
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)







10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


CHECK FOR GROUND ON PLUG 057P11 PIN 11. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 12. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 13. IS GROUND PRESENT?
NO
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 15. IS GROUND PRESENT?
NO
YES
OPEN LEFT INTERTANK ACCESS PANEL. DISCONNECT PLUG 057P13 FROM LEFT TANK FUEL SHUTOFF VALVE. CHECK FOR GROUND ON PLUG PIN 1. IS GROUND PRESENT?
NO
REPLACE LEFT TANK FUEL SHUTOFF VALVE.
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. IS GROUND STILL PRESENT ON PLUG 057P13 PIN 1?
NO
LOCATE GROUND FAULT ON WIRE W629-100-22 OR W655-35-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR GROUND ON PLUG 057P6 PIN 12. IS GROUND PRESENT?
NO
REPLACE FUEL QUANTITY SW BOX.
YES
LOCATE GROUND FAULT ON WIRE W625-23-22 OR W654-7-22 BETWEEN PLUG 057P6 AND PLUG 057P13. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT AFT RIGHT TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 3. IS GROUND PRESENT?
NO
REPLACE RIGHT AFT TANK FUEL LEVEL CONTROL VALVE.
YES
LOCATE GROUND FAULT ON WIRE W629-31-22 OR W655-39-22 BETWEEN RECEPTACLE 300J39 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS AT AFT RIGHT TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 1. IS GROUND PRESENT?
NO
REPLACE RIGHT AFT TANK FUEL LEVEL CONTROL VALVE.
YES
LOCATE GROUND FAULT ON WIRE W629-32-22 OR W655-40-22 BETWEEN RECEPTACLE 300J39 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN RIGHT INTERTANK ACCESS PANEL. DISCONNECT LOWER HARNESS AT RIGHT MAIN TANK ACCESS PANEL. CHECK GROUND ON HARNESS PLUG PIN C. IS GROUND PRESENT?
NO
REPLACE RIGHT MAIN TANK FUEL LEVEL CONTROL VALVE.
YES
LOCATE GROUND FAULT ON WIRE W629-36-22 OR W655-44-22 BETWEEN RECEPTACLE 171J7 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.

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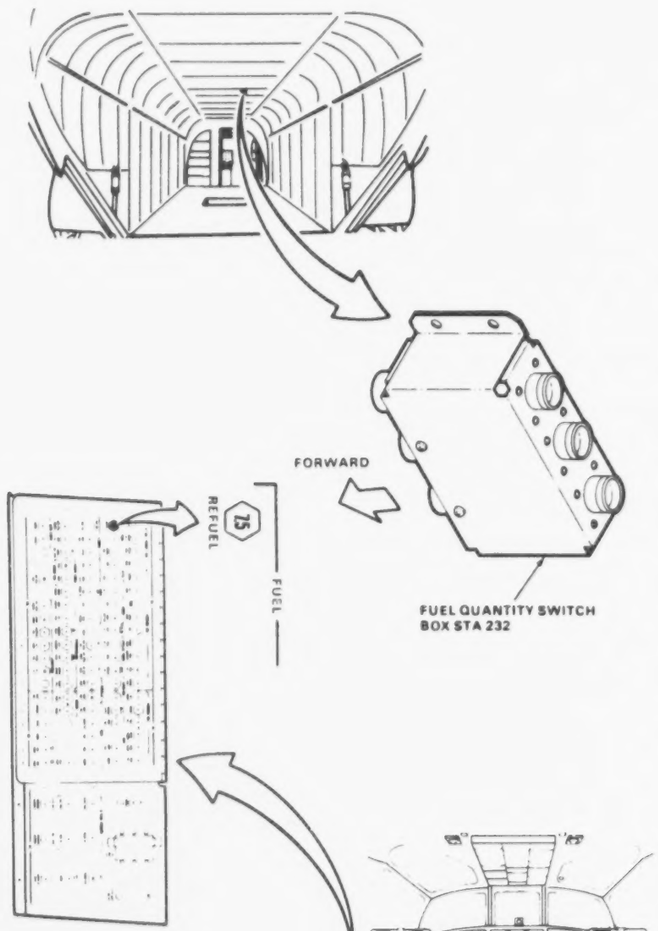
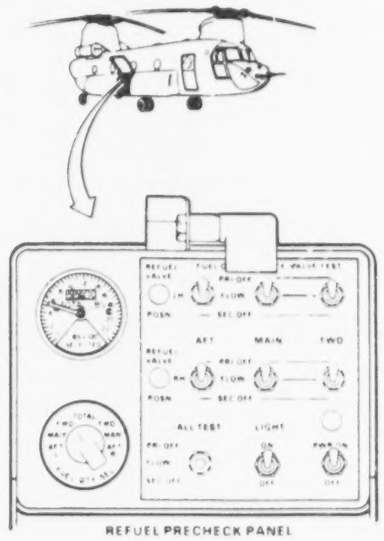
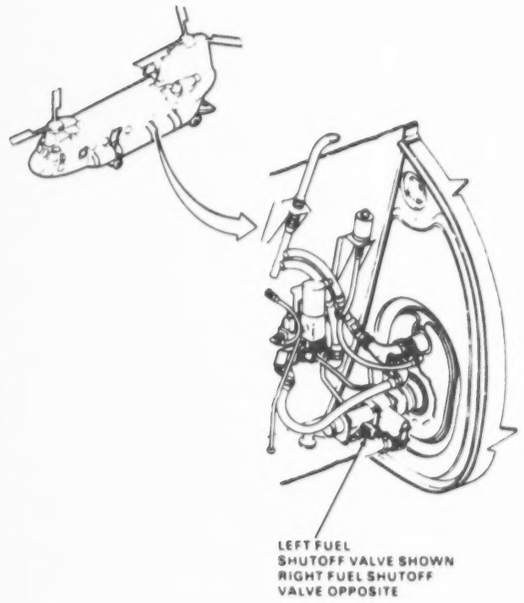
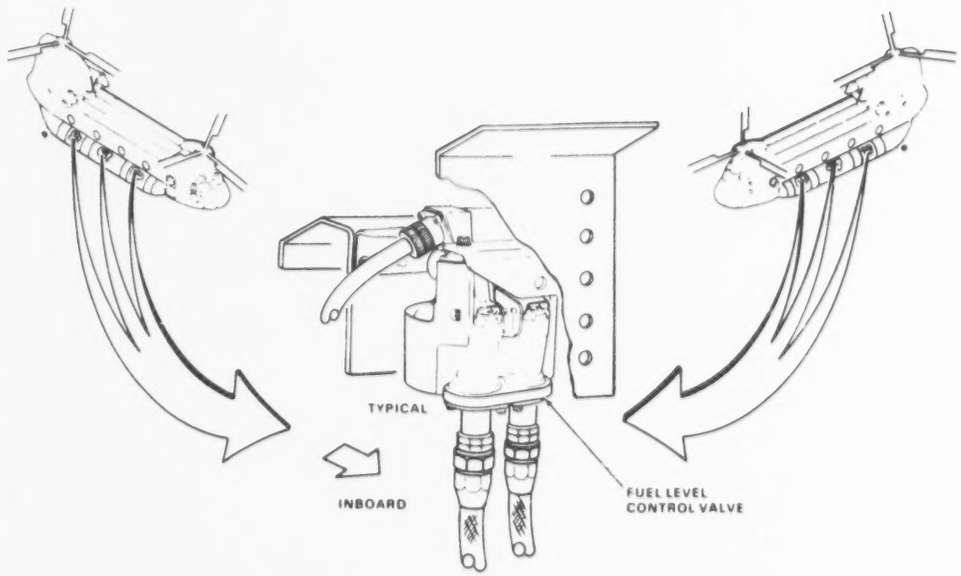
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)









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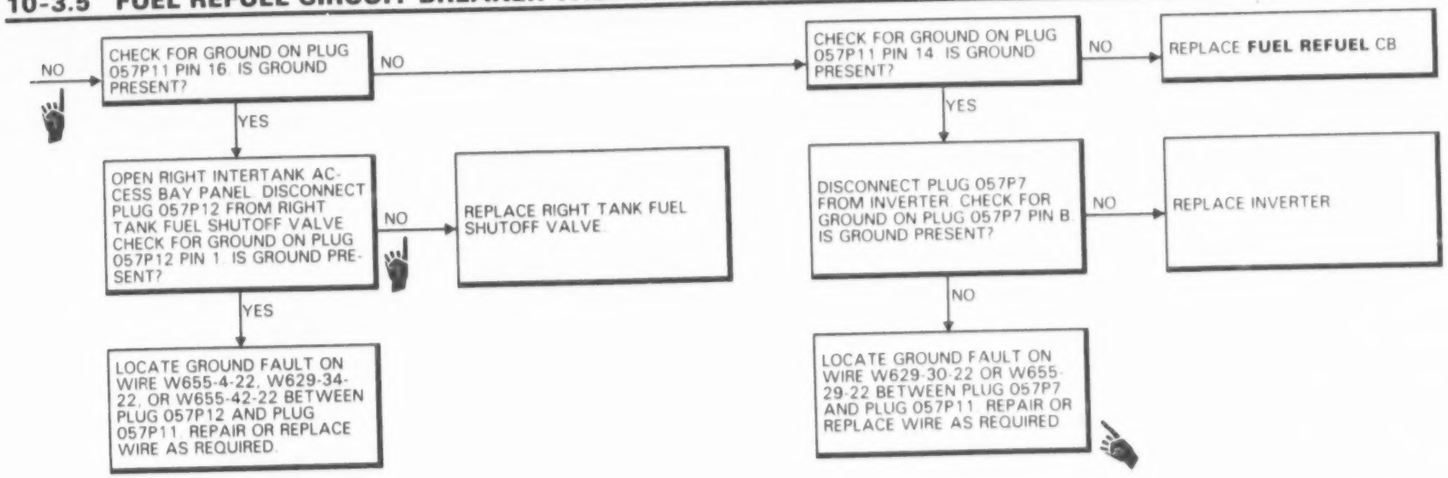
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


NO
CHECK FOR GROUND ON PLUG 057P11 PIN 16. IS GROUND PRESENT?
NO
YES
OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT PLUG 057P12 FROM RIGHT TANK FUEL SHUTOFF VALVE. CHECK FOR GROUND ON PLUG 057P12 PIN 1. IS GROUND PRESENT?
NO
REPLACE RIGHT TANK FUEL SHUTOFF VALVE.
YES
LOCATE GROUND FAULT ON WIRE W655-4-22, W629-34-22, OR W655-42-22 BETWEEN PLUG 057P12 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 057P11 PIN 14. IS GROUND PRESENT?
NO
REPLACE FUEL REFUEL CB
YES
DISCONNECT PLUG 057P7 FROM INVERTER. CHECK FOR GROUND ON PLUG 057P7 PIN B. IS GROUND PRESENT?
NO
REPLACE INVERTER
NO
LOCATE GROUND FAULT ON WIRE W629-30-22 OR W655-29-22 BETWEEN PLUG 057P7 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED

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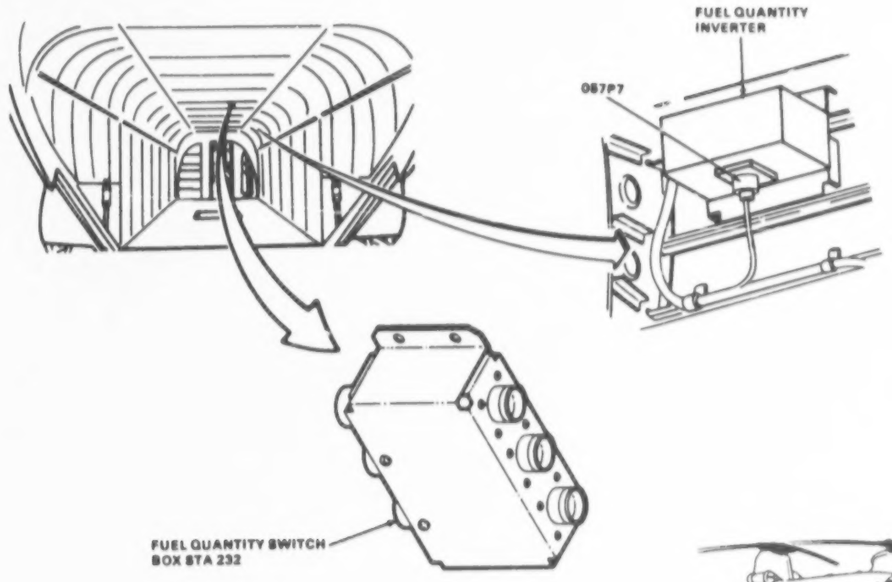
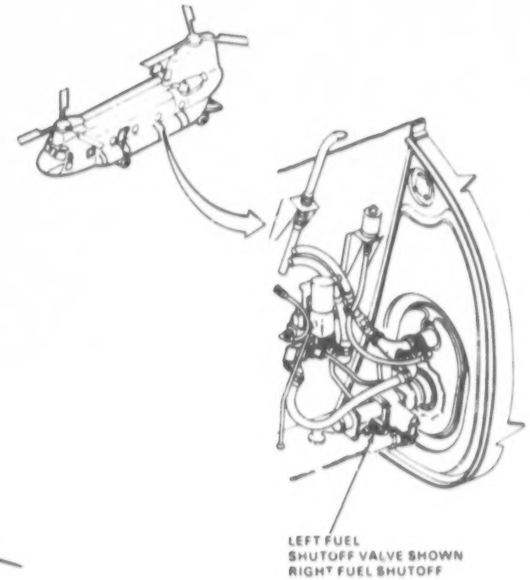
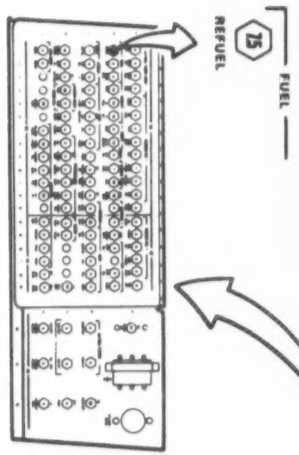
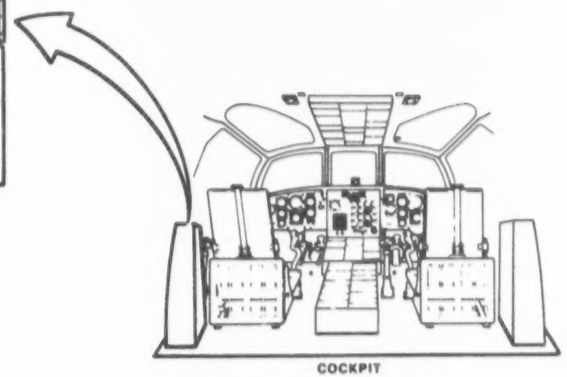
10-3.5 FUEL REFUEL CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)



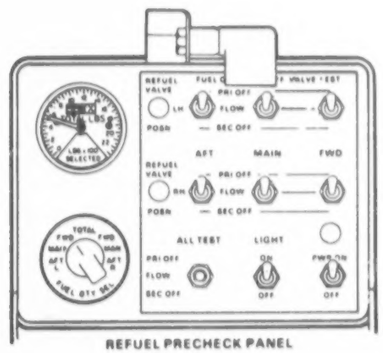




NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



COCKPIT



REFUEL PRECHECK PANEL

90 x 54

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END OF TASK

10-3.6 LH OR RH REFUEL VALVE POSN LIGHT IS ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

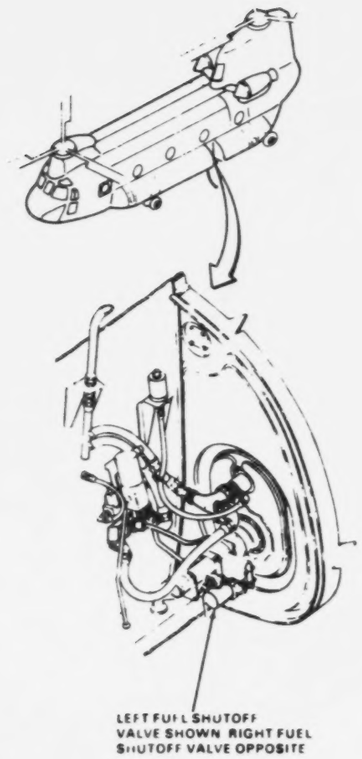
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Multimeter

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



LEFT FUEL SHUTOFF VALVE SHOWN. RIGHT FUEL SHUTOFF VALVE OPPOSITE

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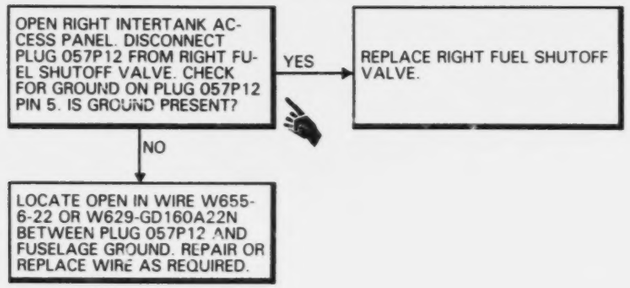
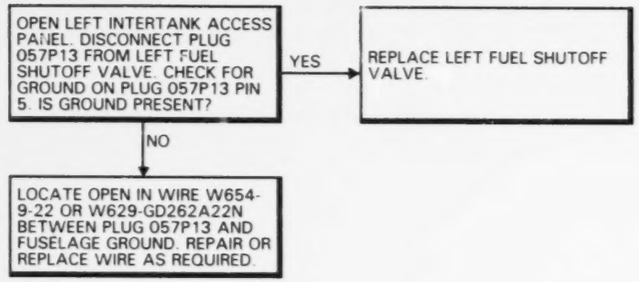
RIGHT REFUEL VALVE POSN LIGHT IS ON


OPEN RIGHT INTERTANK ACCESS PANEL. DISCONNECT PLUG 057P12 FROM RIGHT FUEL SHUTOFF VALVE. CHECK FOR GROUND ON PLUG 057P12 PIN 5. IS GROUND PRESENT?
YES
REPLACE RIGHT FUEL SHUTOFF VALVE.
NO
LOCATE OPEN IN WIRE W655-6-22 OR W629-GD160A22N BETWEEN PLUG 057P12 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

LEFT REFUEL VALVE POSN LIGHT IS ON


OPEN LEFT INTERTANK ACCESS PANEL. DISCONNECT PLUG 057P13 FROM LEFT FUEL SHUTOFF VALVE. CHECK FOR GROUND ON PLUG 057P13 PIN 5. IS GROUND PRESENT?
YES
REPLACE LEFT FUEL SHUTOFF VALVE.
NO
LOCATE OPEN IN WIRE W654-9-22 OR W629-GD262A22N BETWEEN PLUG 057P13 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-3.7 LH OR RH REFUEL VALVE POSN LIGHT DOES NOT COME ON WHEN PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

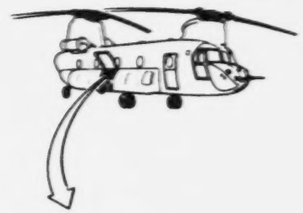
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

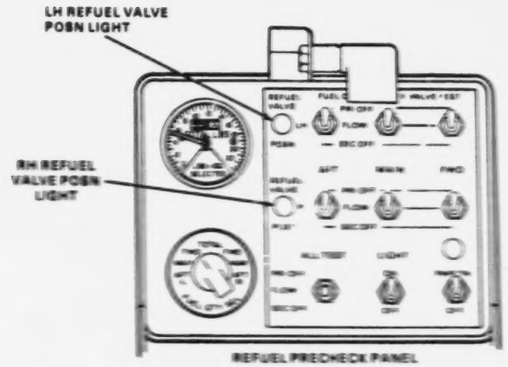
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

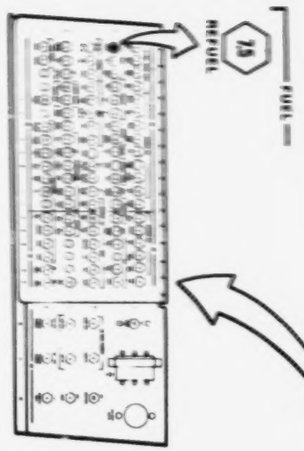
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

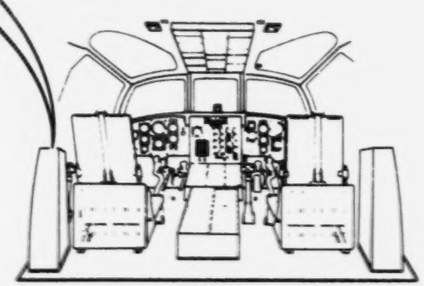




REFUEL PRECHECK PANEL



NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT


COCKPIT

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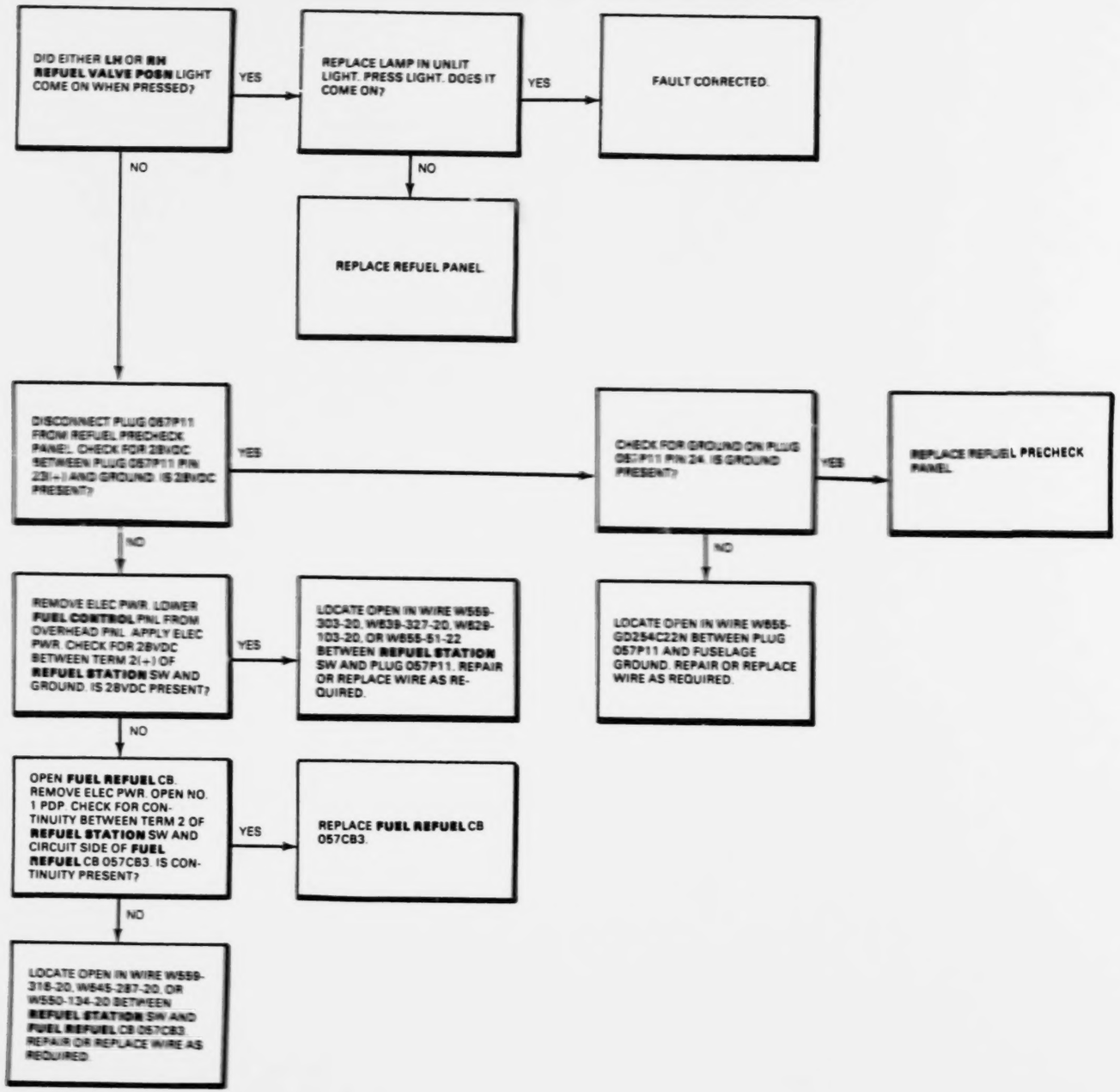
10-3.7 LH OR RH REFUEL VALVE POSN LIGHT DOES NOT COME ON WHEN PRESSED (Continued)


DID EITHER LH OR RH REFUEL VALVE POSN LIGHT COME ON WHEN PRESSED?
YES
REPLACE LAMP IN UNLIT LIGHT. PRESS LIGHT. DOES IT COME ON?
YES
FAULT CORRECTED.
NO
NO
REPLACE REFUEL PANEL.
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR 28VDC BETWEEN PLUG 057P11 PIN 23(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR GROUND ON PLUG 057P11 PIN 24. IS GROUND PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.
NO
NO
REMOVE ELEC PWR. LOWER FUEL CONTROL PNL FROM OVERHEAD PNL. APPLY ELEC PWR. CHECK FOR 28VDC BETWEEN TERM 2(+) OF REFUEL STATION SW AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-303-20, W639-327-20, W629-103-20, OR W655-51-22 BETWEEN REFUEL STATION SW AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W655-GD254C22N BETWEEN PLUG 057P11 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN FUEL REFUEL CB. REMOVE ELEC PWR. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN TERM 2 OF REFUEL STATION SW AND CIRCUIT SIDE OF FUEL REFUEL CB 057CB3. IS CONTINUITY PRESENT?
YES
REPLACE FUEL REFUEL CB 057CB3.
NO
LOCATE OPEN IN WIRE W559-318-20, W645-287-20, OR W550-134-20 BETWEEN REFUEL STATION SW AND FUEL REFUEL CB 057CB3. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-3.8 PWR LIGHT DOES NOT COME ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

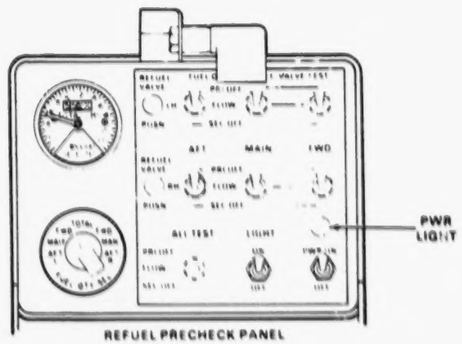
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

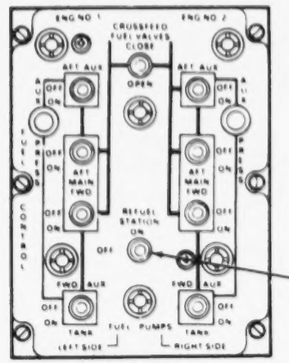
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

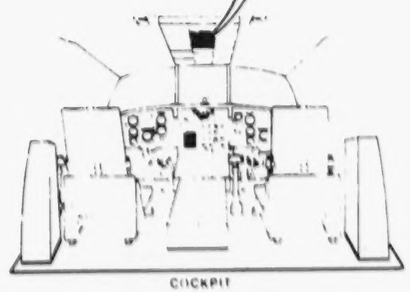
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



REFUEL PRECHECK PANEL



FUEL CONTROL
PANEL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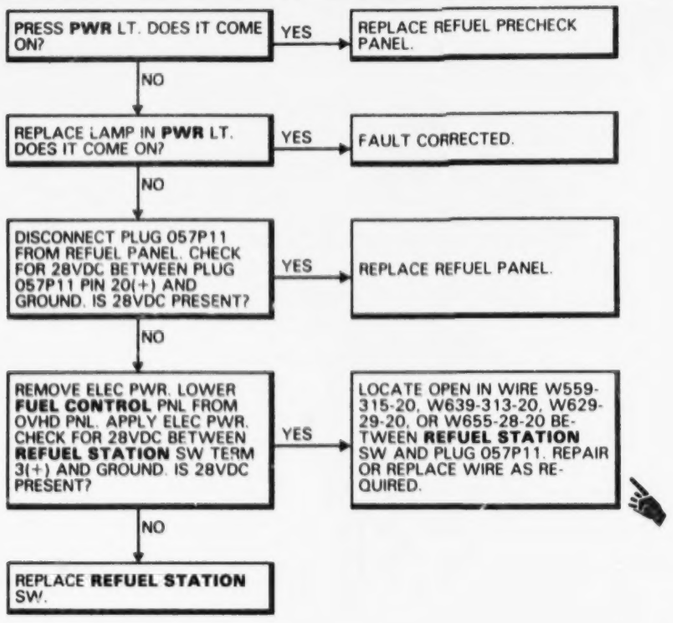
10-3.8 PWR LIGHT DOES NOT COME ON (Continued)


PRESS **PWR** LT. DOES IT COME ON?
YES
REPLACE REFUEL PRECHECK PANEL.
NO
REPLACE LAMP IN **PWR** LT. DOES IT COME ON?
YES
FAULT CORRECTED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR 28VDC BETWEEN PLUG 057P11 PIN 20(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE REFUEL PANEL.
NO
REMOVE ELEC PWR. LOWER **FUEL CONTROL** PNL FROM OVHD PNL. APPLY ELEC PWR. CHECK FOR 28VDC BETWEEN **REFUEL STATION** SW TERM 3(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-315-20, W639-313-20, W629-29-20, OR W655-28-20 BETWEEN **REFUEL STATION** SW AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE **REFUEL STATION** SW.

END OF TASK

10-3.9 LH OR RH REFUEL VALVE POSN LIGHT DOES NOT COME ON OR COMES ON AND STAY ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

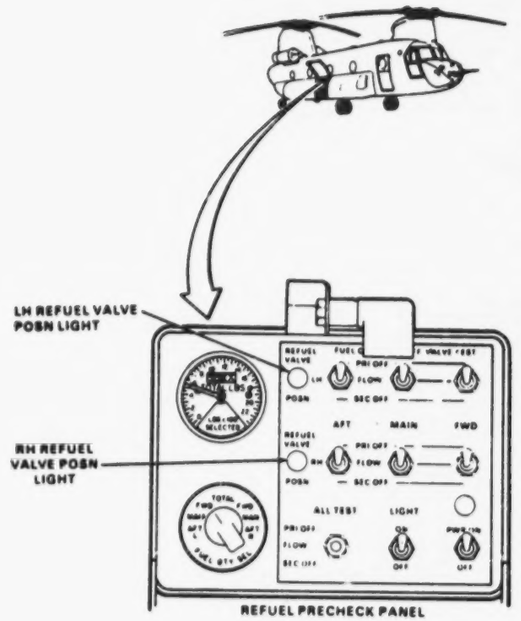
Applicable Configurations:
All

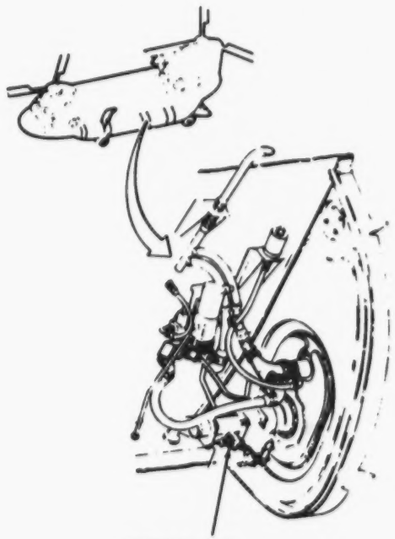
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

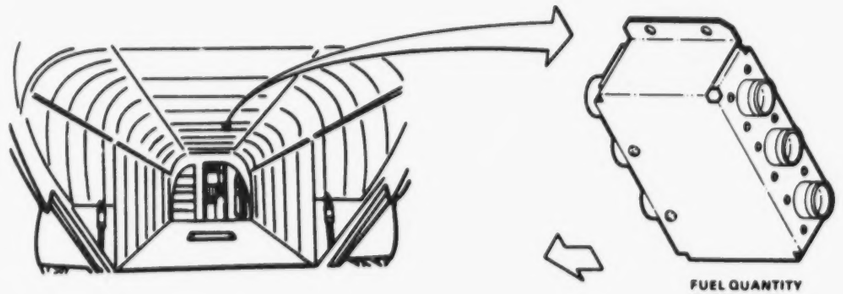
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off







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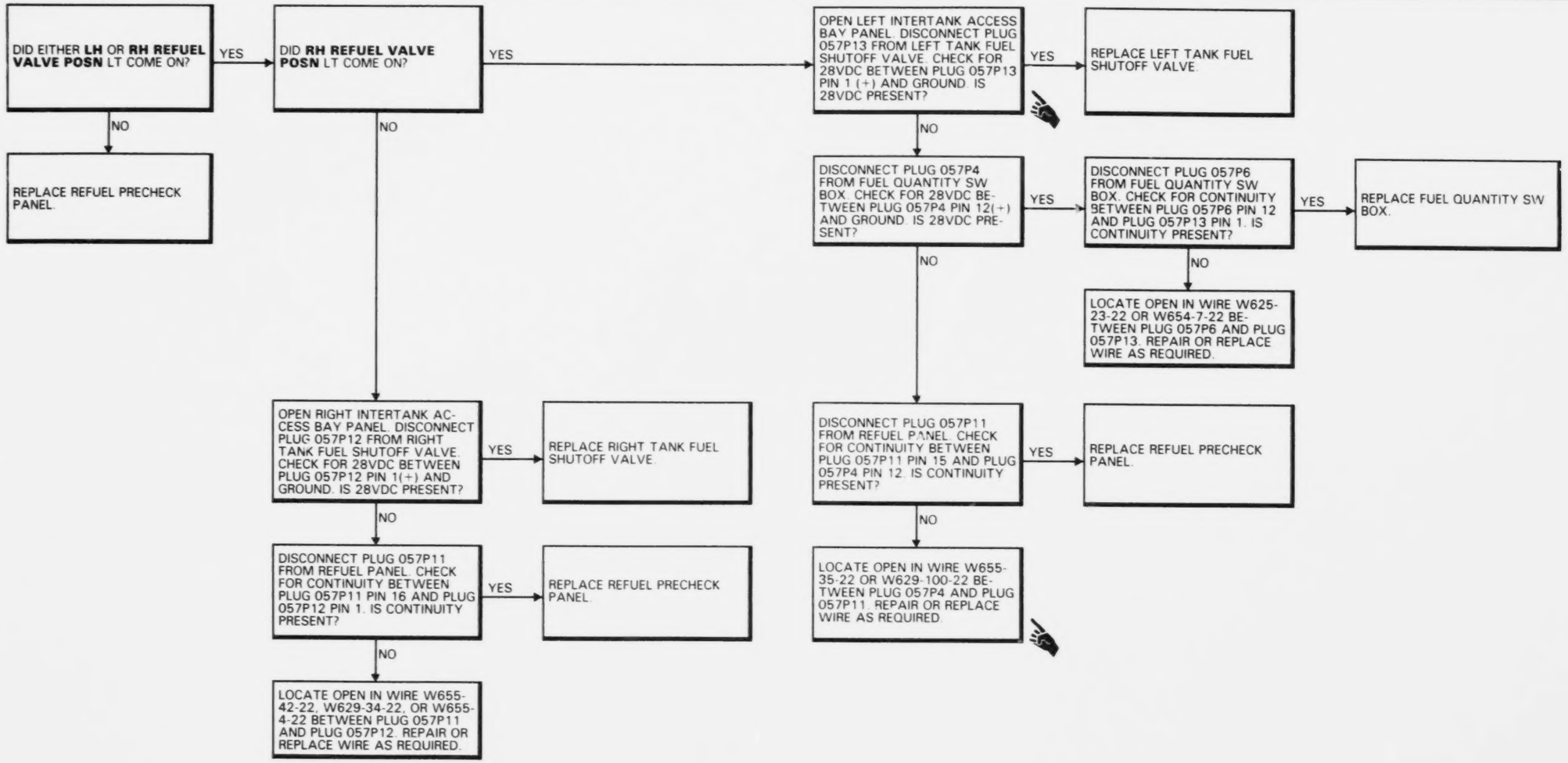
10-3.9 LH OR RH REFUEL VALVE POSN LIGHT DOES NOT COME ON OR COMES ON AND STAYS ON (Continued)


DID EITHER LH OR RH REFUEL VALVE POSN LT COME ON?
YES
NO
REPLACE REFUEL PRECHECK PANEL.
DID RH REFUEL VALVE POSN LT COME ON?
YES
NO
OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT PLUG 057P12 FROM RIGHT TANK FUEL SHUTOFF VALVE. CHECK FOR 28VDC BETWEEN PLUG 057P12 PIN 1(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE RIGHT TANK FUEL SHUTOFF VALVE.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 16 AND PLUG 057P12 PIN 1. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.
NO
LOCATE OPEN IN WIRE W655-42-22, W629-34-22, OR W655-4-22 BETWEEN PLUG 057P11 AND PLUG 057P12. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN LEFT INTERTANK ACCESS BAY PANEL. DISCONNECT PLUG 057P13 FROM LEFT TANK FUEL SHUTOFF VALVE. CHECK FOR 28VDC BETWEEN PLUG 057P13 PIN 1 (+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE LEFT TANK FUEL SHUTOFF VALVE.
NO
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR 28VDC BETWEEN PLUG 057P4 PIN 12(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 12 AND PLUG 057P13 PIN 1. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SW BOX.
NO
LOCATE OPEN IN WIRE W625-23-22 OR W654-7-22 BETWEEN PLUG 057P6 AND PLUG 057P13. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 15 AND PLUG 057P4 PIN 12. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.
NO
LOCATE OPEN IN WIRE W655-35-22 OR W629-100-22 BETWEEN PLUG 057P4 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

10-3.10 REFUEL PANEL LIGHT DOES NOT COME ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

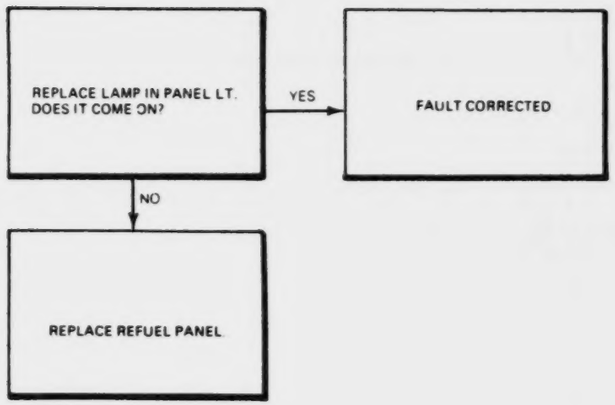
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

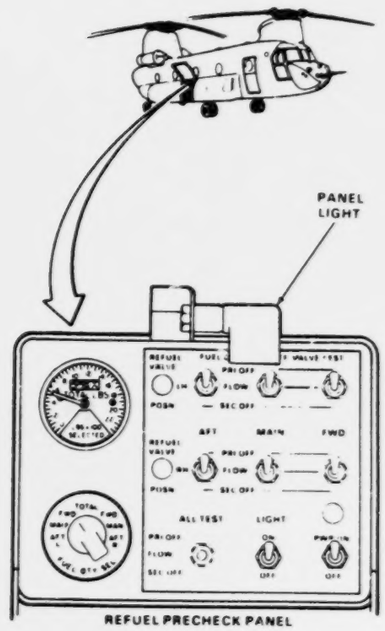
Materials:
None

Personnel Required
68F10 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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END OF TASK

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Task 10-3.11 Deleted.
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10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

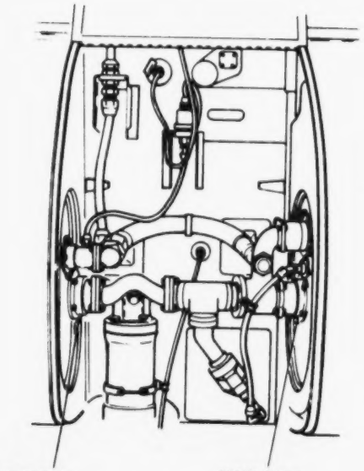
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Multimeter

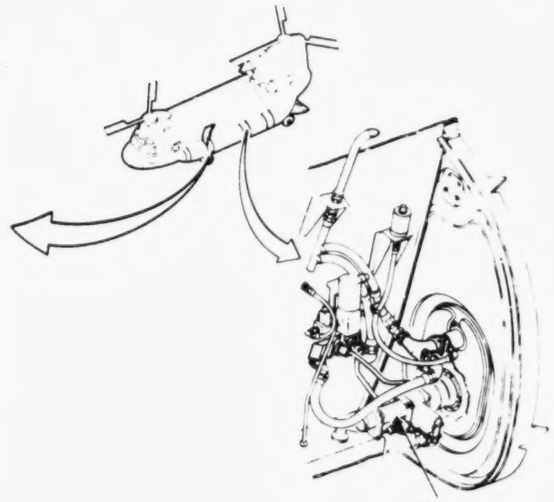
Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer
68F20 Aircraft Electrician

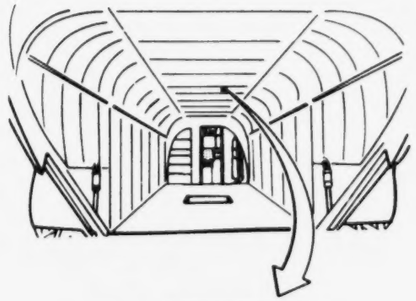
References:
TM 55-1520-240-23

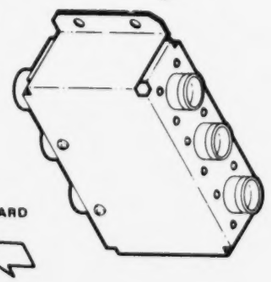
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Aircraft Being Refueled
Hydraulic Power Off



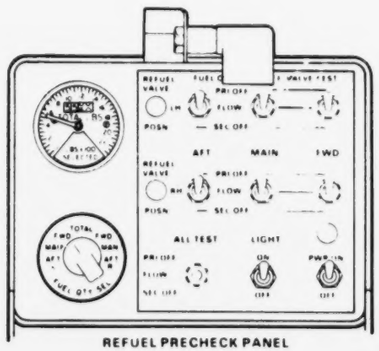


LEFT FUEL LEVEL
SHUTOFF VALVES SHOWN
RIGHT FUEL LEVEL
SHUTOFF VALVES SIMILAR

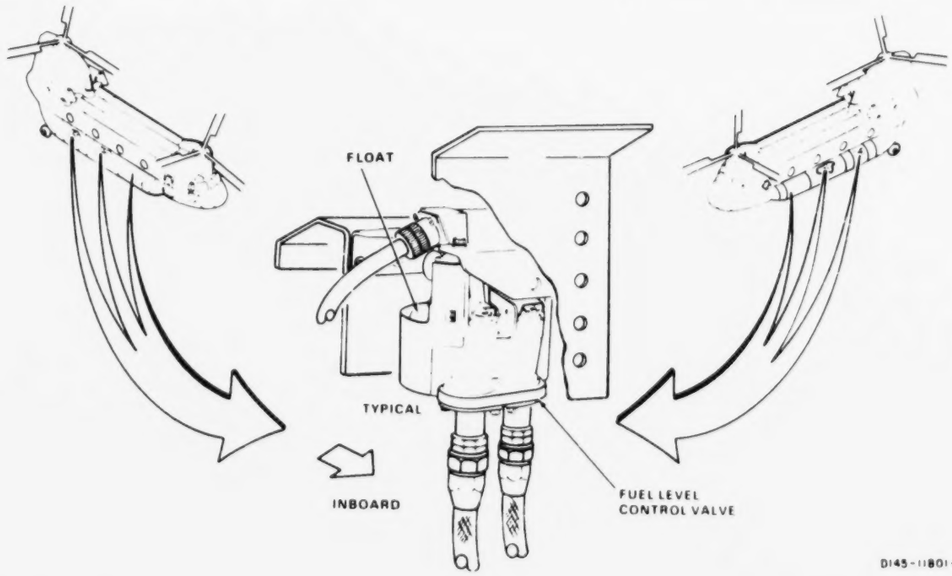




FUEL QUANTITY SWITCH
BOX STA 232



REFUEL PRECHECK PANEL



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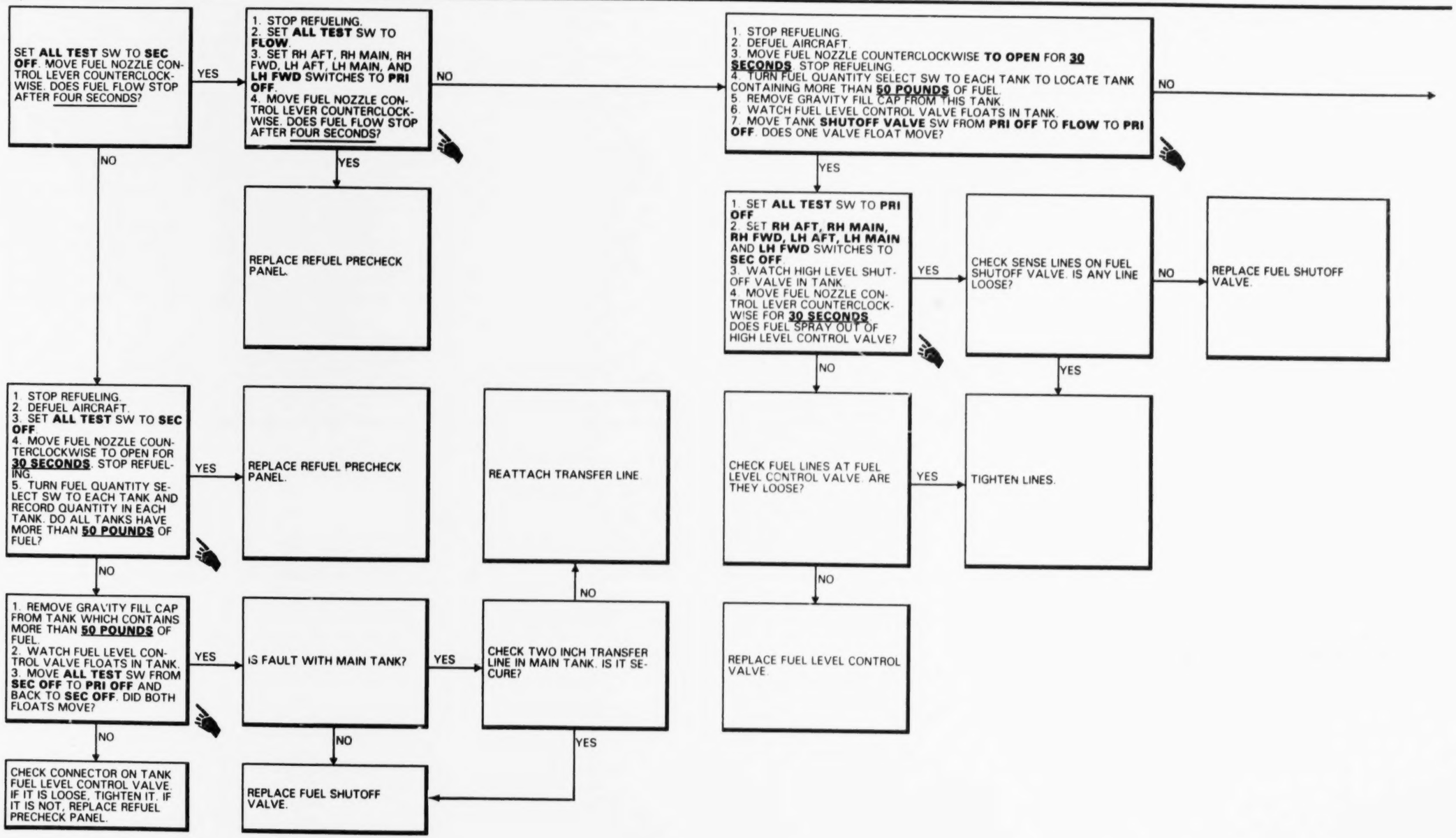
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)


SET **ALL TEST** SW TO **SEC OFF**. MOVE FUEL NOZZLE CONTROL LEVER COUNTERCLOCKWISE. DOES FUEL FLOW STOP AFTER FOUR SECONDS?
YES
NO
1. STOP REFUELING.
2. SET **ALL TEST** SW TO **FLOW**.
3. SET RH AFT, RH MAIN, RH FWD, LH AFT, LH MAIN, AND **LH FWD** SWITCHES TO **PRI OFF**.
4. MOVE FUEL NOZZLE CONTROL LEVER COUNTERCLOCKWISE. DOES FUEL FLOW STOP AFTER FOUR SECONDS?
YES
NO
REPLACE REFUEL PRECHECK PANEL.
1. STOP REFUELING.
2. DEFUEL AIRCRAFT.
3. MOVE FUEL NOZZLE COUNTERCLOCKWISE **TO OPEN** FOR **30 SECONDS**. STOP REFUELING.
4. TURN FUEL QUANTITY SELECT SW TO EACH TANK TO LOCATE TANK CONTAINING MORE THAN **50 POUNDS** OF FUEL.
5. REMOVE GRAVITY FILL CAP FROM THIS TANK.
6. WATCH FUEL LEVEL CONTROL VALVE FLOATS IN TANK.
7. MOVE TANK **SHUTOFF VALVE** SW FROM **PRI OFF** TO **FLOW** TO **PRI OFF**. DOES ONE VALVE FLOAT MOVE?
NO
YES
1. SET **ALL TEST** SW TO **PRI OFF**
2. SET **RH AFT, RH MAIN, RH FWD, LH AFT, LH MAIN** AND **LH FWD** SWITCHES TO **SEC OFF**.
3. WATCH HIGH LEVEL SHUTOFF VALVE IN TANK.
4. MOVE FUEL NOZZLE CONTROL LEVER COUNTERCLOCKWISE FOR **30 SECONDS**. DOES FUEL SPRAY OUT OF HIGH LEVEL CONTROL VALVE?
YES
CHECK SENSE LINES ON FUEL SHUTOFF VALVE. IS ANY LINE LOOSE?
NO
REPLACE FUEL SHUTOFF VALVE.
YES
NO
1. STOP REFUELING.
2. DEFUEL AIRCRAFT.
3. SET **ALL TEST** SW TO **SEC OFF**.
4. MOVE FUEL NOZZLE COUNTERCLOCKWISE TO OPEN FOR **30 SECONDS**. STOP REFUELING.
5. TURN FUEL QUANTITY SELECT SW TO EACH TANK AND RECORD QUANTITY IN EACH TANK. DO ALL TANKS HAVE MORE THAN **50 POUNDS** OF FUEL?
YES
REPLACE REFUEL PRECHECK PANEL.
REATTACH TRANSFER LINE.
CHECK FUEL LINES AT FUEL LEVEL CONTROL VALVE. ARE THEY LOOSE?
YES
TIGHTEN LINES.
NO
REPLACE FUEL LEVEL CONTROL VALVE.
NO
1. REMOVE GRAVITY FILL CAP FROM TANK WHICH CONTAINS MORE THAN **50 POUNDS** OF FUEL.
2. WATCH FUEL LEVEL CONTROL VALVE FLOATS IN TANK.
3. MOVE **ALL TEST** SW FROM **SEC OFF** TO **PRI OFF** AND BACK TO **SEC OFF**. DID BOTH FLOATS MOVE?
YES
IS FAULT WITH MAIN TANK?
YES
CHECK TWO INCH TRANSFER LINE IN MAIN TANK. IS IT SECURE?
NO
YES
NO
CHECK CONNECTOR ON TANK FUEL LEVEL CONTROL VALVE. IF IT IS LOOSE, TIGHTEN IT. IF IT IS NOT, REPLACE REFUEL PRECHECK PANEL.
REPLACE FUEL SHUTOFF VALVE.

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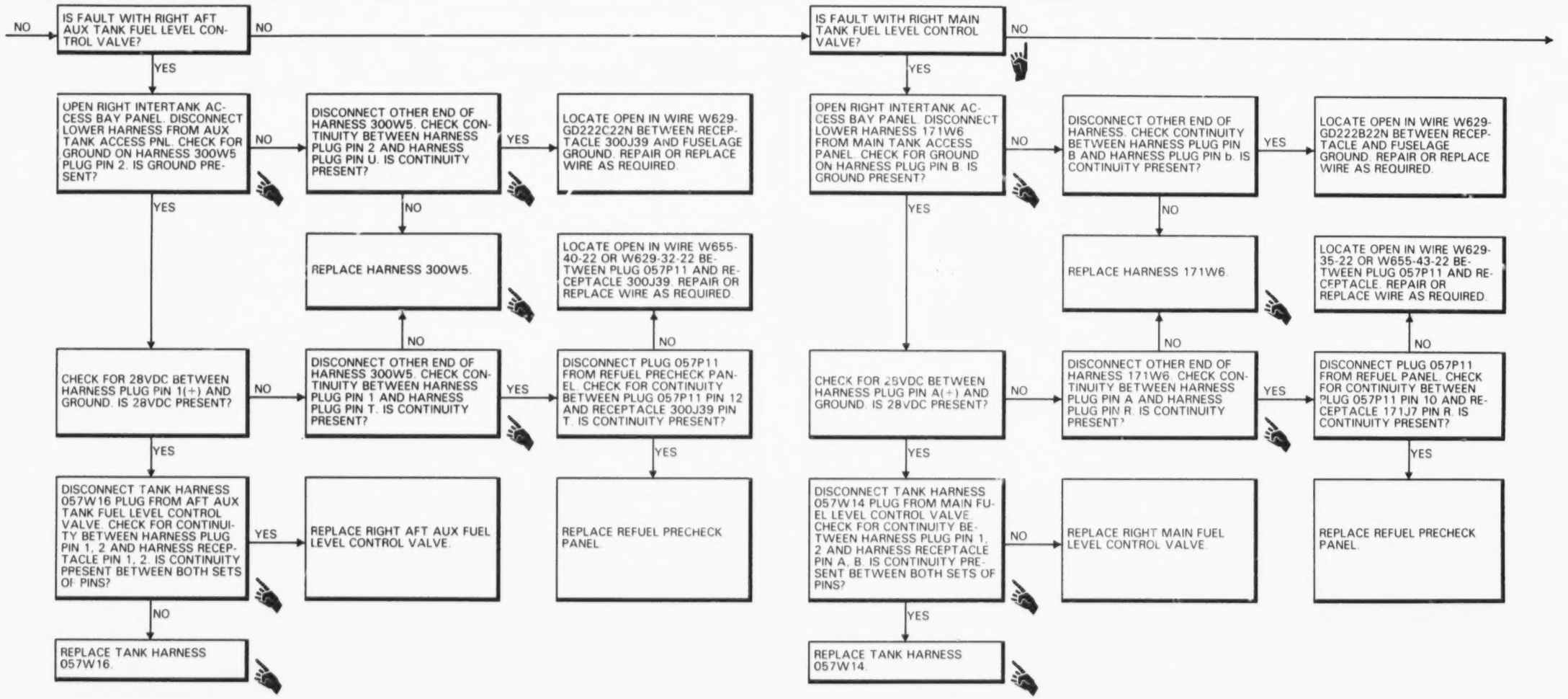
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)


NO
IS FAULT WITH RIGHT AFT AUX TANK FUEL LEVEL CONTROL VALVE?
NO
YES
OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS FROM AUX TANK ACCESS PNL. CHECK FOR GROUND ON HARNESS 300W5 PLUG PIN 2. IS GROUND PRESENT?
NO
YES
DISCONNECT OTHER END OF HARNESS 300W5. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 2 AND HARNESS PLUG PIN U. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W629-GD222C22N BETWEEN RECEPTACLE 300J39 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS 300W5.
LOCATE OPEN IN WIRE W655-40-22 OR W629-32-22 BETWEEN PLUG 057P11 AND RECEPTACLE 300J39. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 1(+) AND GROUND. IS 28VDC PRESENT?
NO
YES
DISCONNECT OTHER END OF HARNESS 300W5. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 1 AND HARNESS PLUG PIN T. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 12 AND RECEPTACLE 300J39 PIN T. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.
DISCONNECT TANK HARNESS 057W16 PLUG FROM AFT AUX TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 1, 2 AND HARNESS RECEPTACLE PIN 1, 2. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE RIGHT AFT AUX FUEL LEVEL CONTROL VALVE.
NO
REPLACE TANK HARNESS 057W16.
IS FAULT WITH RIGHT MAIN TANK FUEL LEVEL CONTROL VALVE?
NO
YES
OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS 171W6 FROM MAIN TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN B. IS GROUND PRESENT?
NO
YES
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN B AND HARNESS PLUG PIN b. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W629-GD222B22N BETWEEN RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS 171W6.
LOCATE OPEN IN WIRE W629-35-22 OR W655-43-22 BETWEEN PLUG 057P11 AND RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN A(+) AND GROUND. IS 28VDC PRESENT?
NO
YES
DISCONNECT OTHER END OF HARNESS 171W6. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN A AND HARNESS PLUG PIN R. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 10 AND RECEPTACLE 171J7 PIN R. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.
DISCONNECT TANK HARNESS 057W14 PLUG FROM MAIN FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 1, 2 AND HARNESS RECEPTACLE PIN A, B. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
NO
REPLACE RIGHT MAIN FUEL LEVEL CONTROL VALVE.
YES
REPLACE TANK HARNESS 057W14.

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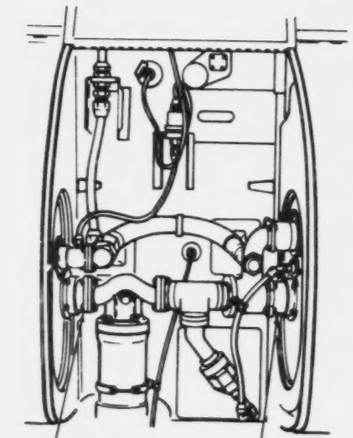
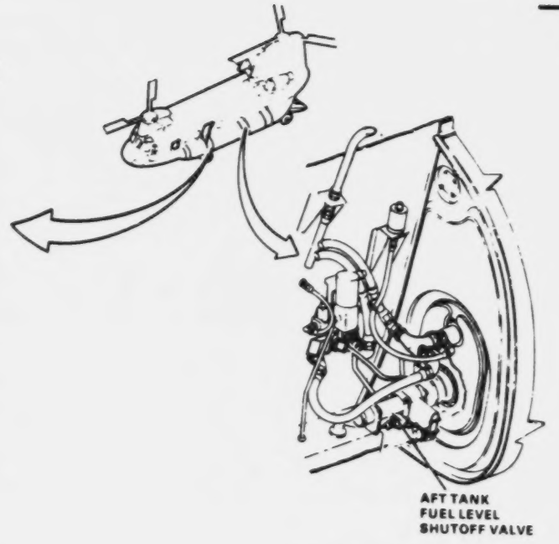
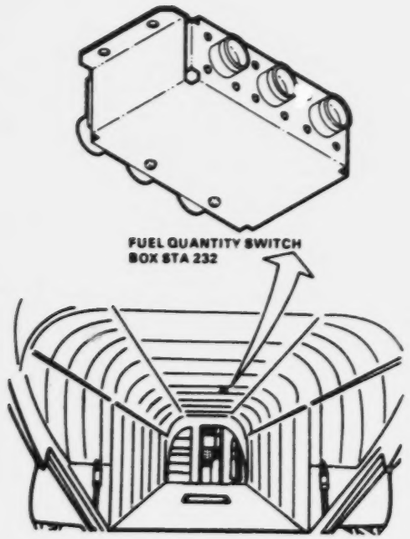
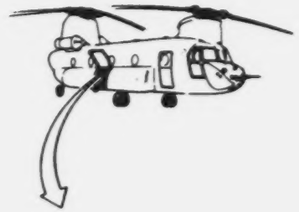
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)

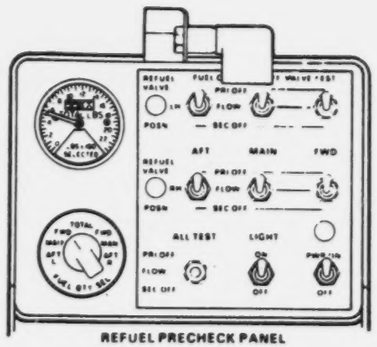




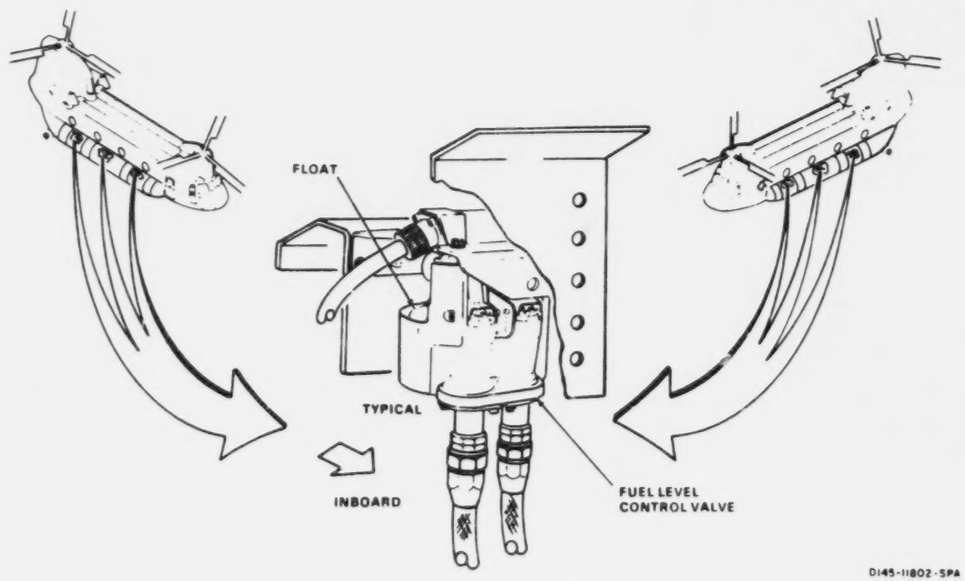
LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR







98X84



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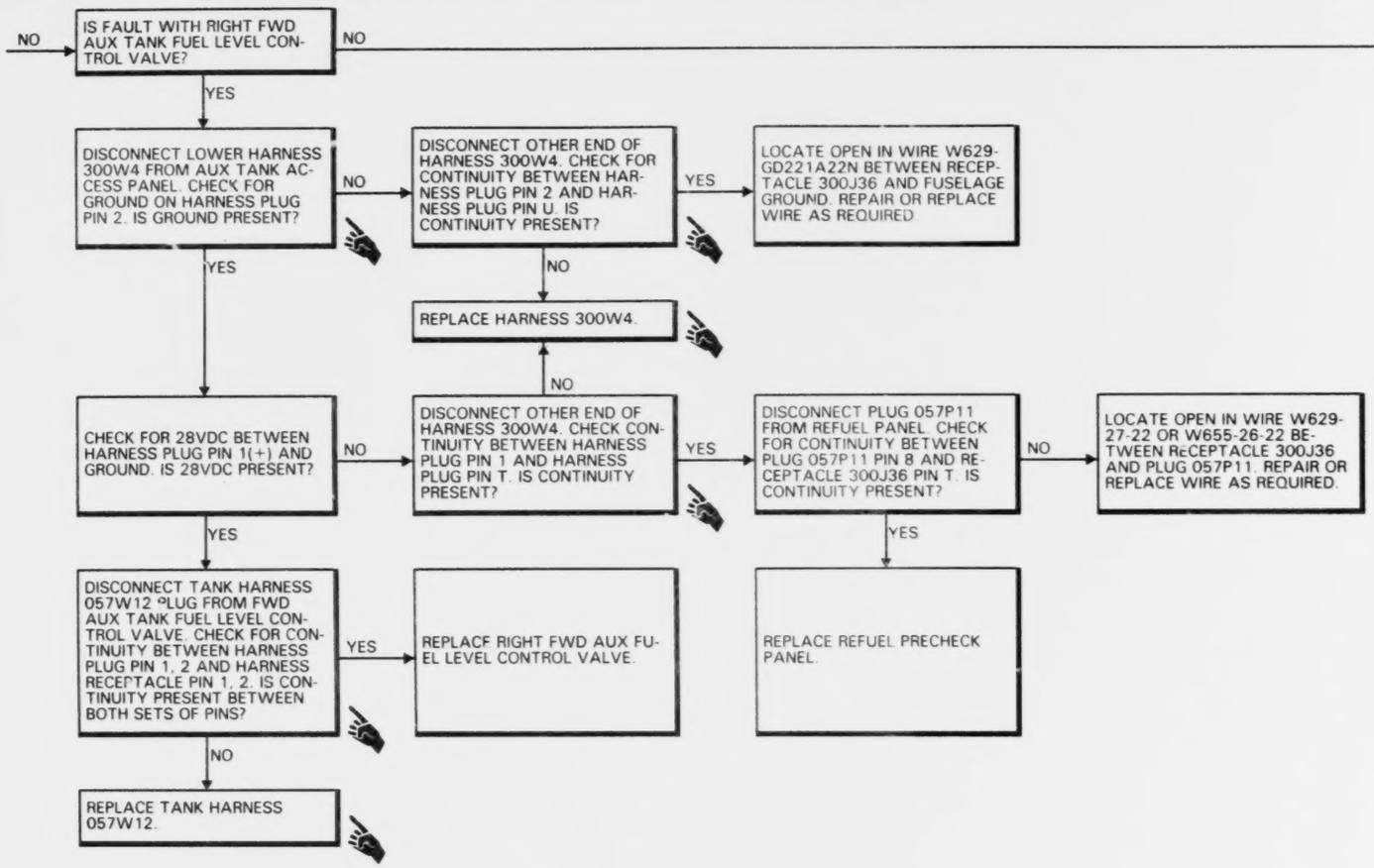
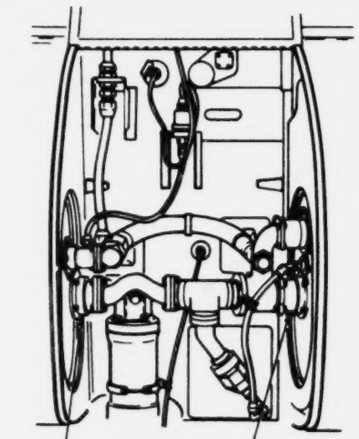
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)


IS FAULT WITH RIGHT FWD AUX TANK FUEL LEVEL CONTROL VALVE?
NO
NO
YES
DISCONNECT LOWER HARNESS 300W4 FROM AUX TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 2. IS GROUND PRESENT?
NO
YES
DISCONNECT OTHER END OF HARNESS 300W4. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 2 AND HARNESS PLUG PIN U. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W629-GD221A22N BETWEEN RECEPTACLE 300J36 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS 300W4.
NO
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 1(+) AND GROUND. IS 28VDC PRESENT?
NO
YES
DISCONNECT OTHER END OF HARNESS 300W4. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 1 AND HARNESS PLUG PIN T. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 8 AND RECEPTACLE 300J36 PIN T. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W629-27-22 OR W655-26-22 BETWEEN RECEPTACLE 300J36 AND PLUG 057P11. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
YES
DISCONNECT TANK HARNESS 057W12 PLUG FROM FWD AUX TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 1, 2 AND HARNESS RECEPTACLE PIN 1, 2. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE RIGHT FWD AUX FUEL LEVEL CONTROL VALVE.
REPLACE REFUEL PRECHECK PANEL.
NO
REPLACE TANK HARNESS 057W12.

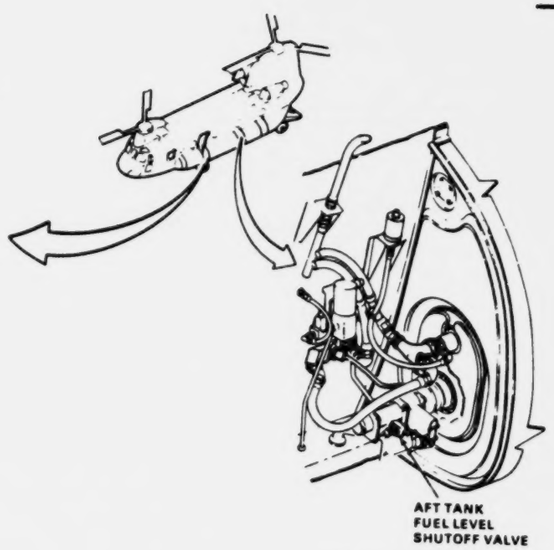
GO TO NEXT PAGE

10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)



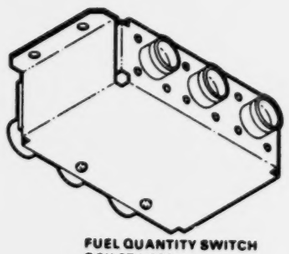
FWD TANK FUEL LEVEL SHUTOFF VALVE

MAIN TANK FUEL LEVEL SHUTOFF VALVE

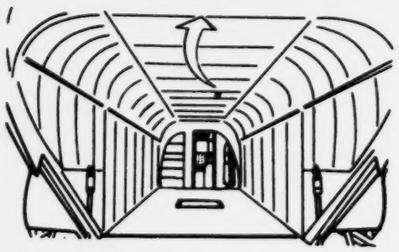


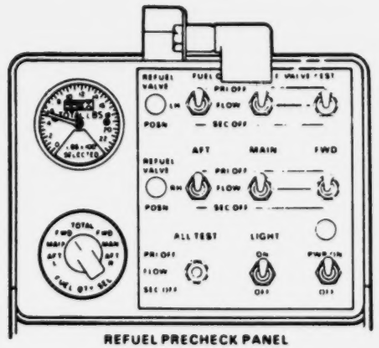
AFT TANK FUEL LEVEL SHUTOFF VALVE

LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR.

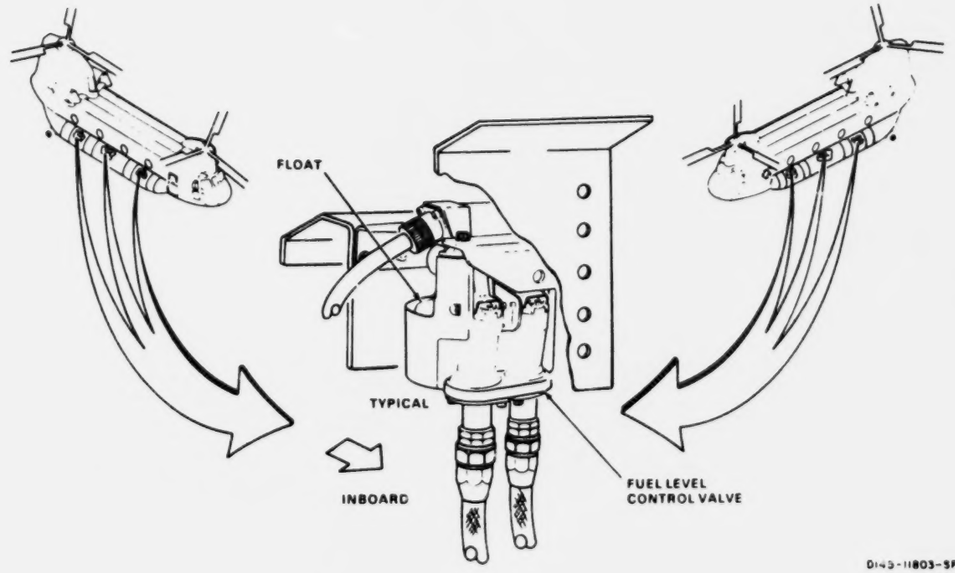


FUEL QUANTITY SWITCH BOX STA 232





REFUEL PRECHECK PANEL



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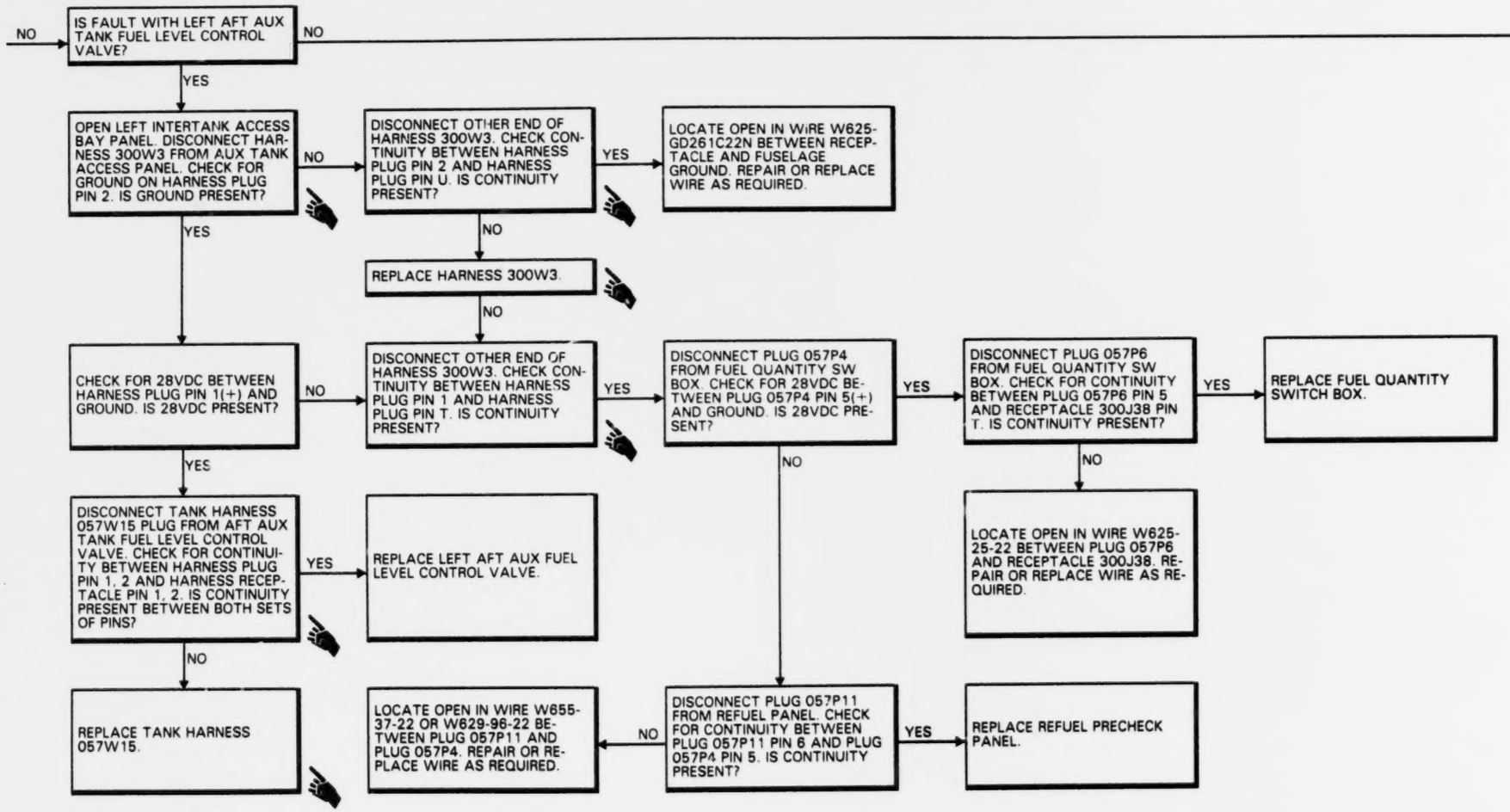
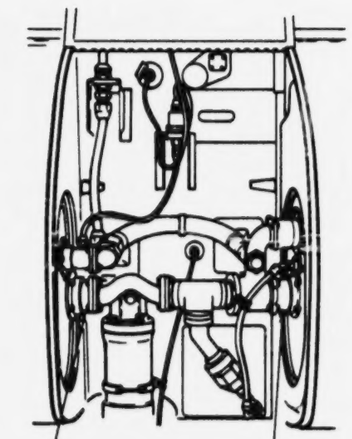
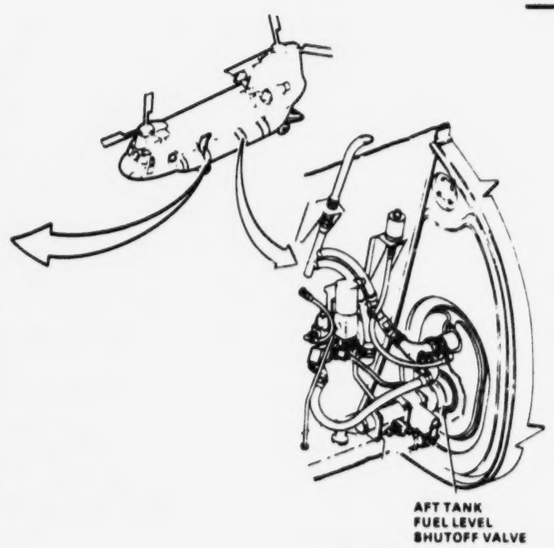
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)


NO
IS FAULT WITH LEFT AFT AUX TANK FUEL LEVEL CONTROL VALVE?
NO
YES
OPEN LEFT INTERTANK ACCESS BAY PANEL. DISCONNECT HARNESS 300W3 FROM AUX TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 2. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 300W3. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 2 AND HARNESS PLUG PIN U. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD261C22N BETWEEN RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
NO
REPLACE HARNESS 300W3.
NO
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 1(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 300W3. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 1 AND HARNESS PLUG PIN T. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR 28VDC BETWEEN PLUG 057P4 PIN 5(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 5 AND RECEPTACLE 300J38 PIN T. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SWITCH BOX.
YES
NO
NO
DISCONNECT TANK HARNESS 057W15 PLUG FROM AFT AUX TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 1, 2 AND HARNESS RECEPTACLE PIN 1, 2. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE LEFT AFT AUX FUEL LEVEL CONTROL VALVE.
LOCATE OPEN IN WIRE W625-25-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J38. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE TANK HARNESS 057W15.
LOCATE OPEN IN WIRE W655-37-22 OR W629-96-22 BETWEEN PLUG 057P11 AND PLUG 057P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 6 AND PLUG 057P4 PIN 5. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.

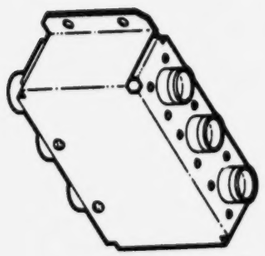
GO TO NEXT PAGE

10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)

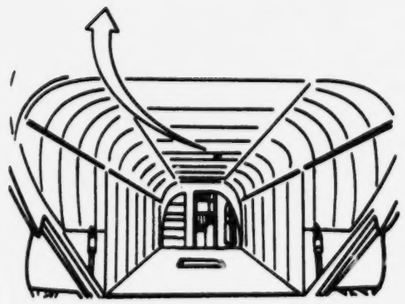


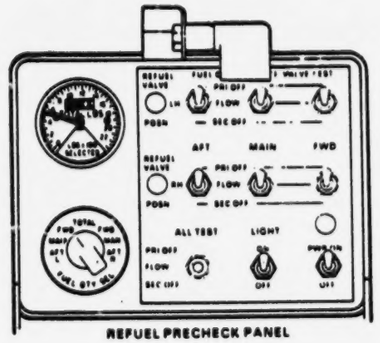


LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR.



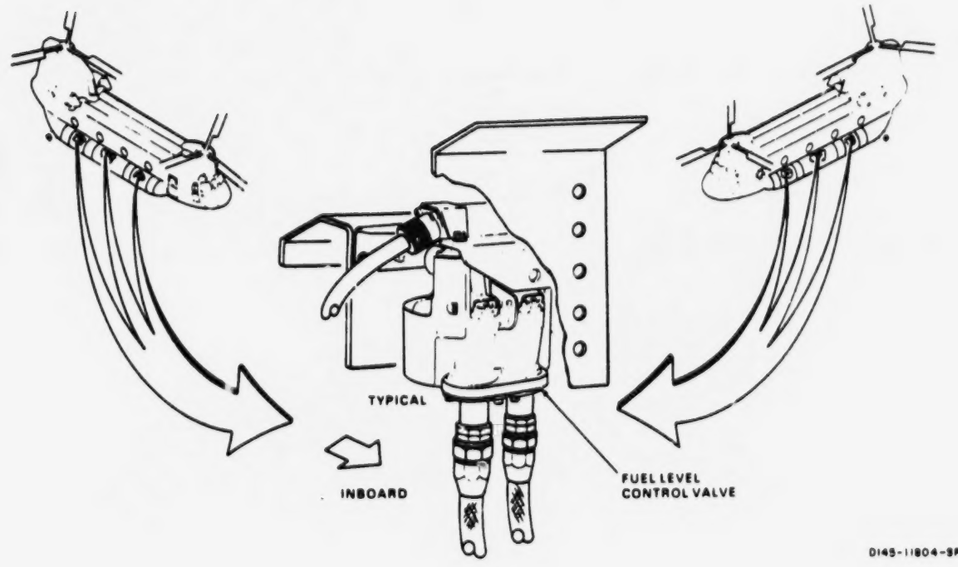
FUEL QUANTITY SWITCH BOX STA 232





REFUEL PRECHECK PANEL

90X84



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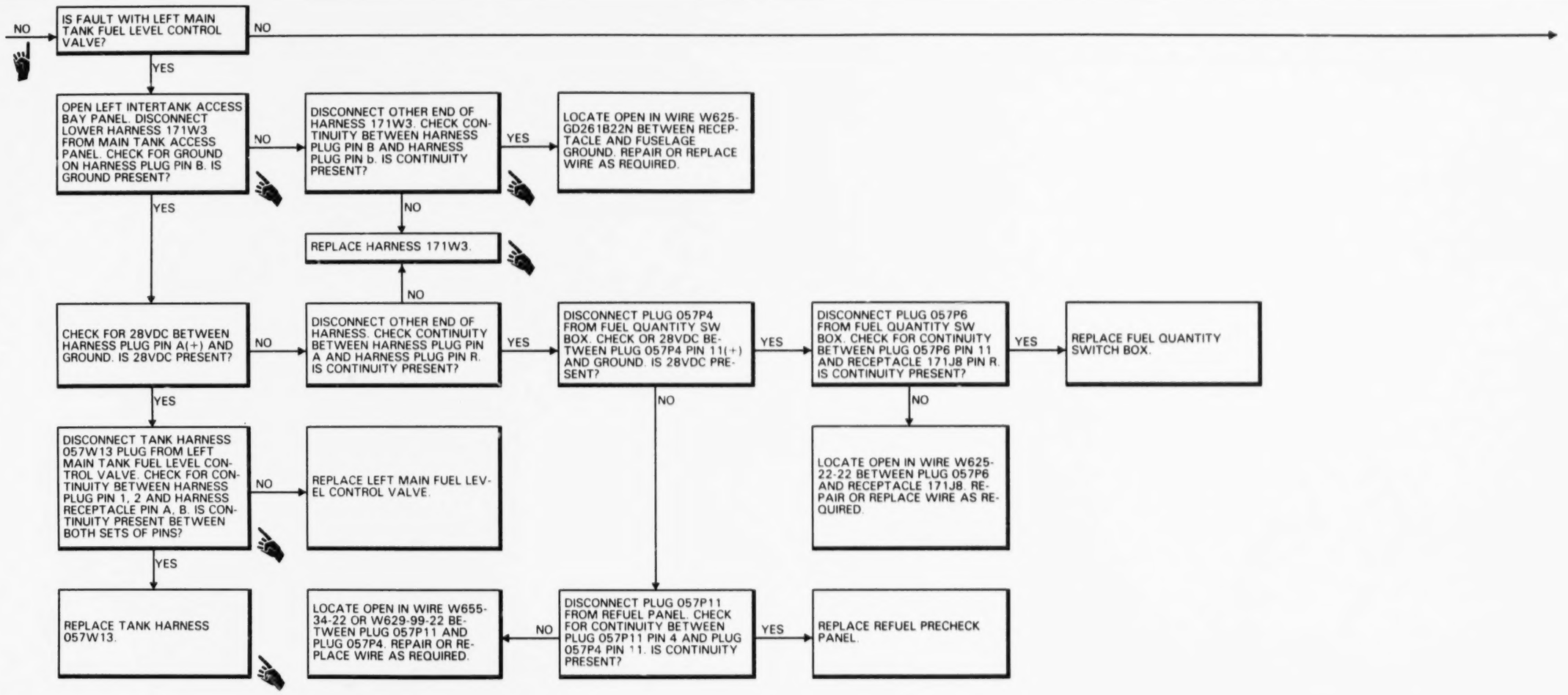
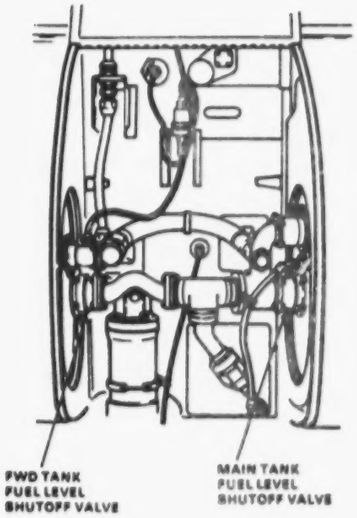
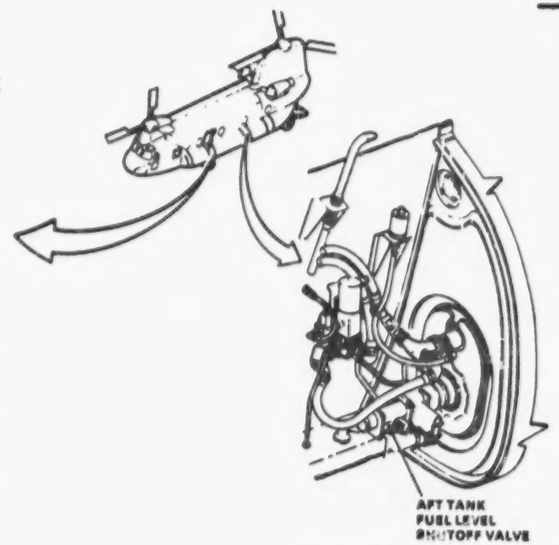
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)


IS FAULT WITH LEFT MAIN TANK FUEL LEVEL CONTROL VALVE?
NO
NO
YES
OPEN LEFT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS 171W3 FROM MAIN TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN B. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 171W3. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN B AND HARNESS PLUG PIN b. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD261B22N BETWEEN RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
NO
REPLACE HARNESS 171W3.
NO
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN A(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN A AND HARNESS PLUG PIN R. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK OR 28VDC BETWEEN PLUG 057P4 PIN 11(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 11 AND RECEPTACLE 171J8 PIN R. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SWITCH BOX.
YES
NO
NO
DISCONNECT TANK HARNESS 057W13 PLUG FROM LEFT MAIN TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 1, 2 AND HARNESS RECEPTACLE PIN A, B. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
NO
REPLACE LEFT MAIN FUEL LEVEL CONTROL VALVE.
LOCATE OPEN IN WIRE W625-22-22 BETWEEN PLUG 057P6 AND RECEPTACLE 171J8. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE TANK HARNESS 057W13.
LOCATE OPEN IN WIRE W655-34-22 OR W629-99-22 BETWEEN PLUG 057P11 AND PLUG 057P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 4 AND PLUG 057P4 PIN 11. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.

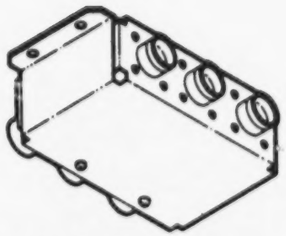
GO TO NEXT PAGE

10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)

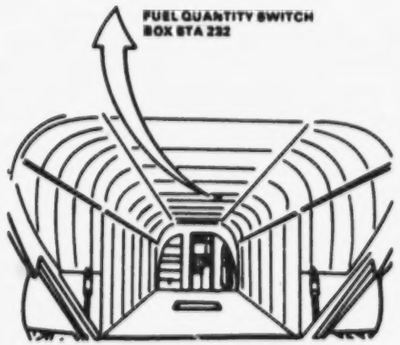




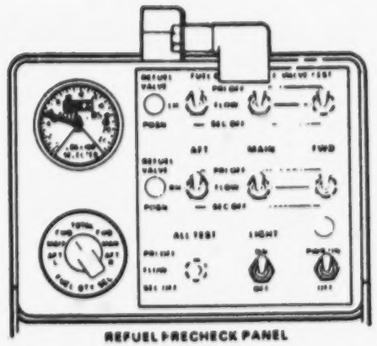
LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR.



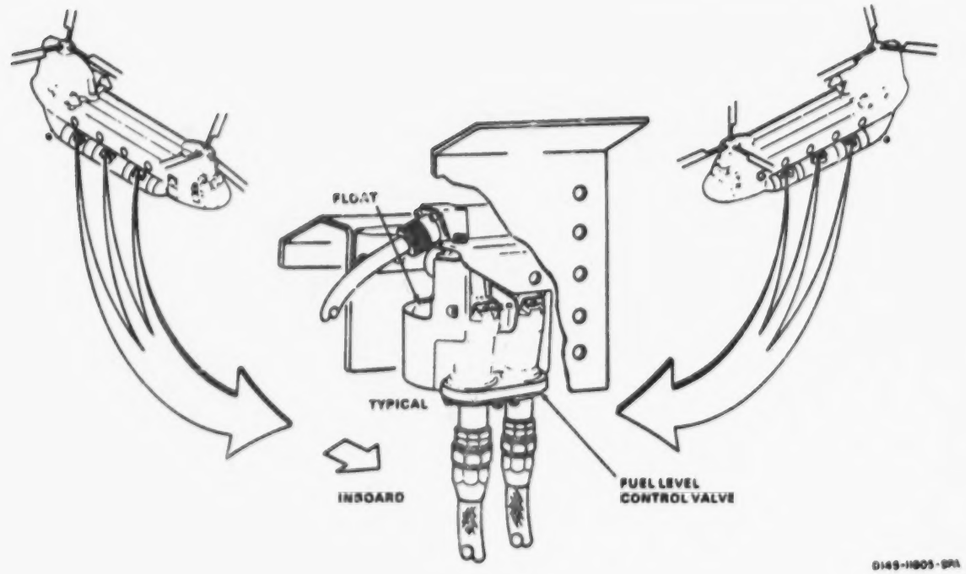
FUEL QUANTITY SWITCH BOX STA 232



60 X 54



REFUEL PRECHECK PANEL



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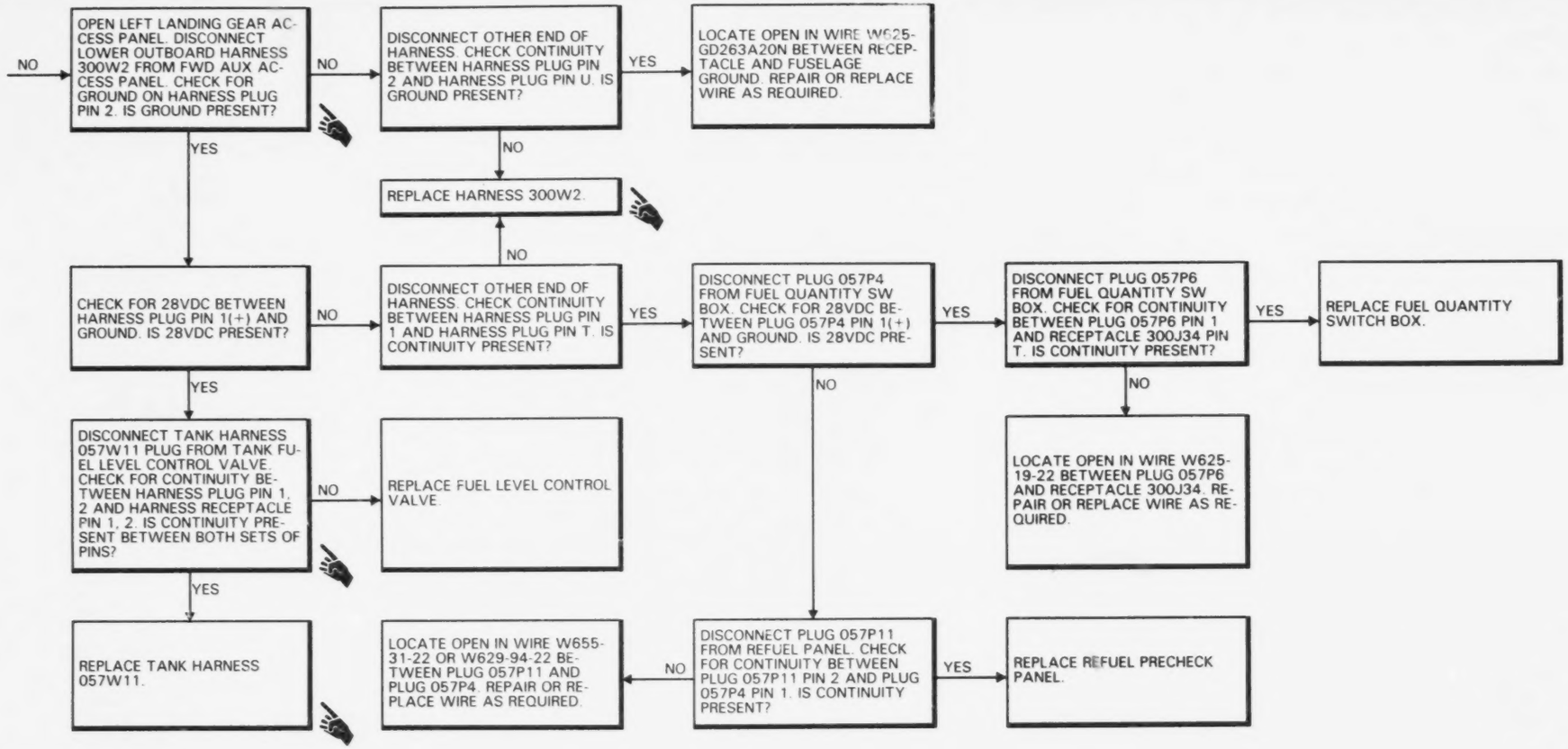
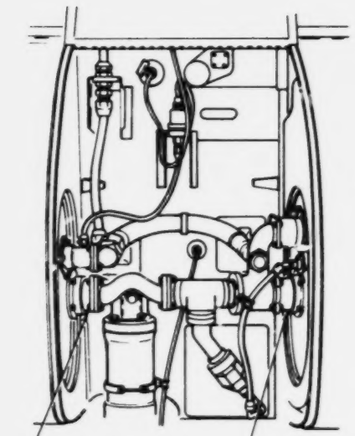
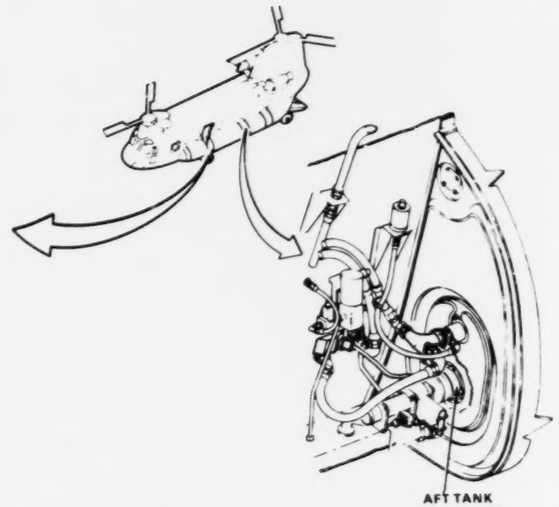
10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)

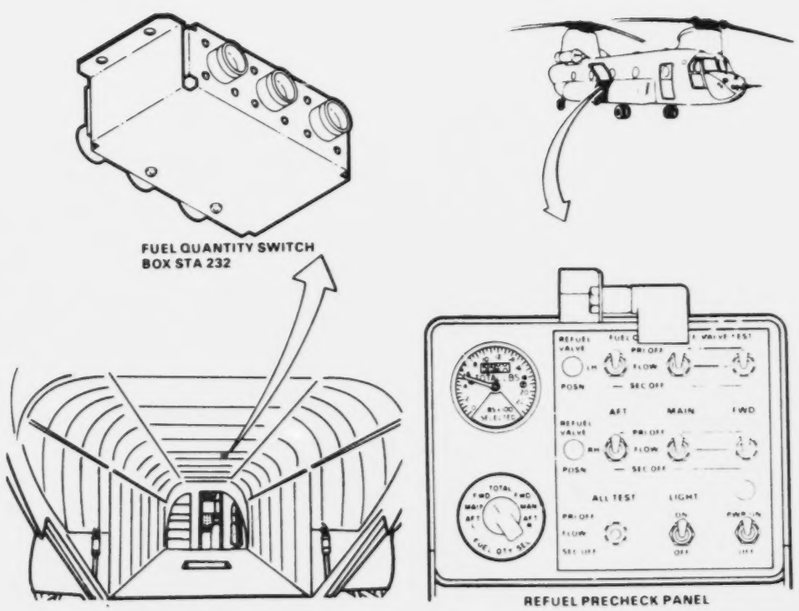

OPEN LEFT LANDING GEAR ACCESS PANEL. DISCONNECT LOWER OUTBOARD HARNESS 300W2 FROM FWD AUX ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 2. IS GROUND PRESENT?
NO
NO
YES
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 2 AND HARNESS PLUG PIN U. IS GROUND PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD263A20N BETWEEN RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS 300W2.
NO
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 1(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 1 AND HARNESS PLUG PIN T. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR 28VDC BETWEEN PLUG 057P4 PIN 1(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 1 AND RECEPTACLE 300J34 PIN T. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SWITCH BOX.
YES
NO
LOCATE OPEN IN WIRE W625-19-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J34. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT TANK HARNESS 057W11 PLUG FROM TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 1, 2 AND HARNESS RECEPTACLE PIN 1, 2. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
NO
REPLACE FUEL LEVEL CONTROL VALVE.
YES
REPLACE TANK HARNESS 057W11.
LOCATE OPEN IN WIRE W655-31-22 OR W629-94-22 BETWEEN PLUG 057P11 AND PLUG 057P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 2 AND PLUG 057P4 PIN 1. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.

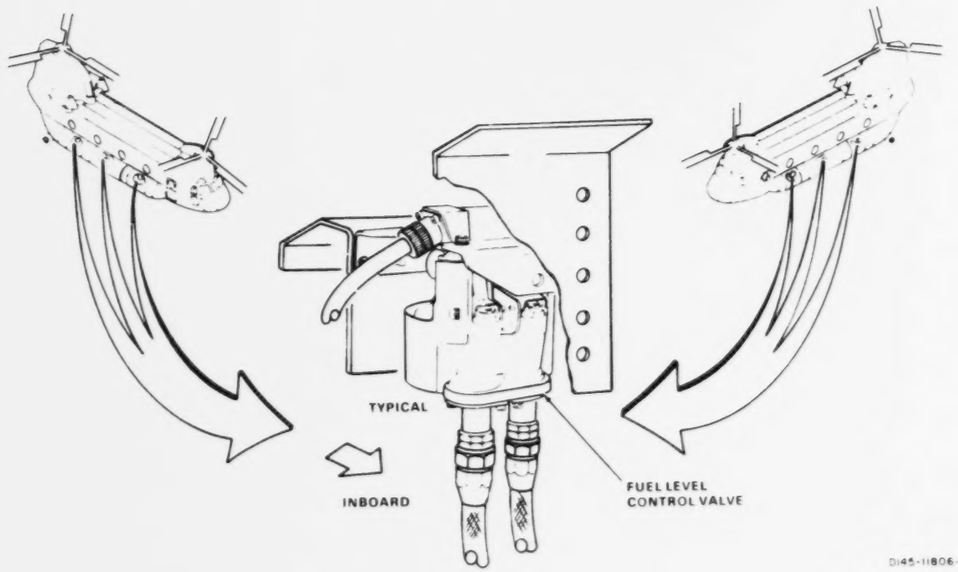
GO TO NEXT PAGE

10-3.12 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT PRI OFF (Continued)









END OF TASK

10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF

FAULT ISOLATION PROCEDURE

INITIAL STUP

Applicable Configurations:
All

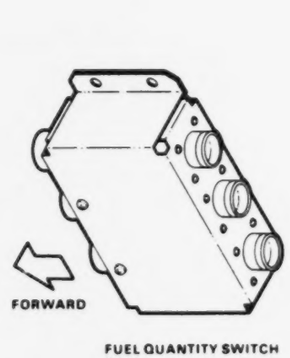
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Multimeter

Materials:
None

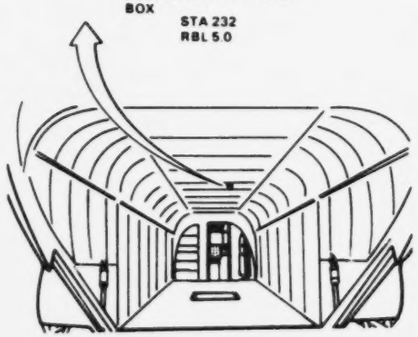
Personnel Required:
67U20 Medium Helicopter Repairer
68F20 Aircraft Electrician

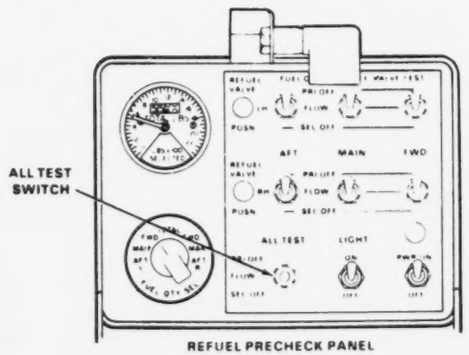
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Aircraft Being Refueled
Hydraulic Power Off

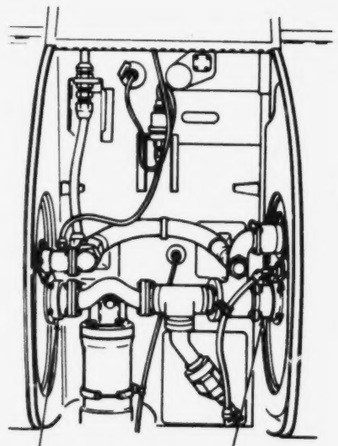


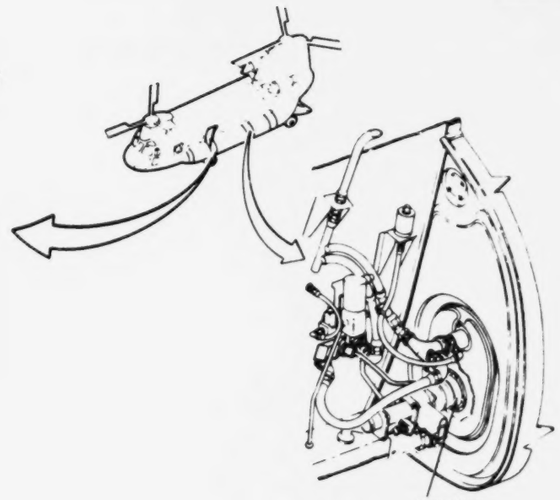
FUEL QUANTITY SWITCH BOX
STA 232
RBL 5.0



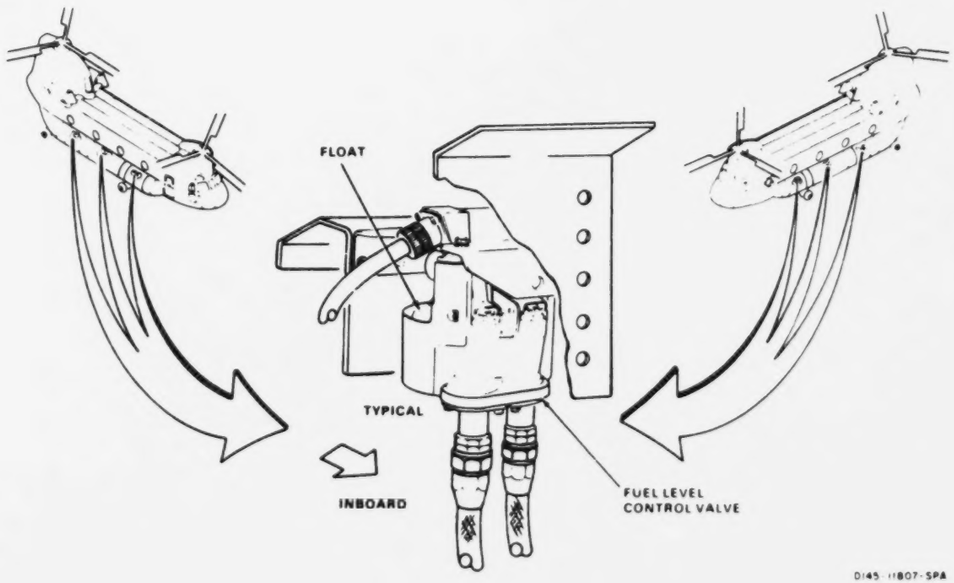


REFUEL PRECHECK PANEL





LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR



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1. STOP REFUELING.
2. DEFUEL AIRCRAFT.
3. MOVE FUEL NOZZLE COUNTERCLOCKWISE TO OPEN FOR **30 SECONDS.** STOP REFUELING.
4. TURN FUEL QUANTITY SELECT SW TO EACH TANK TO LOCATE TANK CONTAINING MORE THAN **50 POUNDS** OF FUEL.
5. REMOVE GRAVITY FILL CAP FROM THIS TANK.
6. WATCH FUEL LEVEL CONTROL VALVE FLOATS IN TANK.
7. MOVE TANK **SHUTOFF VALVE** SW FROM **SEC OFF** TO **FLOW** TO **SEC OFF**. DOES ONE VALVE FLOAT MOVE?

NO → IS FAULT WITH RIGHT AFT AUX TANK FUEL LEVEL CONTROL VALVE?

NO →

YES ↓

1. SET **ALL TEST** SW TO **SEC OFF**.
2. SET **RH AFT, RH MAIN, RH FWD, LH AFT, LH MAIN,** AND **LH FWD** SWITCHES TO **PRI OFF**.
3. WATCH FUEL LEVEL CONTROL VALVE IN TANK.
4. MOVE FUEL NOZZLE CONTROL LEVER COUNTERCLOCKWISE FOR **30 SECONDS**. DOES FUEL STOP SPRAYING OUT OF FUEL LEVER CONTROL VALVE?

YES → REPLACE TANK FUEL LEVEL CONTROL VALVE.

NO ↓

CHECK FUEL LINES AT FUEL LEVEL CONTROL VALVE. ARE THEY LOOSE?

YES → TIGHTEN LINES.

NO ↓

REPLACE FUEL LEVEL CONTROL VALVE.

YES ↓

OPEN RIGHT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS 300W5 FROM AFT AUX ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 4. IS GROUND PRESENT?

NO → DISCONNECT OTHER END OF HARNESS 300W5. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 4 AND HARNESS PLUG PIN W. IS CONTINUITY PRESENT?

YES → LOCATE OPEN IN WIRE W629-GD222D22N BETWEEN RECEPTACLE 300J39 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓

REPLACE HARNESS 300W5.

LOCATE OPEN IN WIRE W655-39-22 OR W629-31-22 BETWEEN PLUG 057P11 AND RECEPTACLE 300J39. REPAIR OR REPLACE WIRE AS REQUIRED.

YES ↓

CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 3(+) AND GROUND. IS 28VDC PRESENT?

NO → DISCONNECT OTHER END OF HARNESS 300W5. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 3 AND HARNESS PLUG PIN V. IS CONTINUITY PRESENT?

YES → DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 13 AND RECEPTACLE 300J39 PIN V. IS CONTINUITY PRESENT?

NO ↑

YES ↓

REPLACE REFUEL PRECHECK PANEL.

DISCONNECT TANK HARNESS 057W16 PLUG FROM AFT AUX TANK HIGH LEVEL SHUTOFF VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 3, 4 AND HARNESS RECEPTACLE PIN 3, 4. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?

YES → REPLACE FUEL LEVEL CONTROL VALVE 057L8.

NO ↓

REPLACE TANK HARNESS 057W16.

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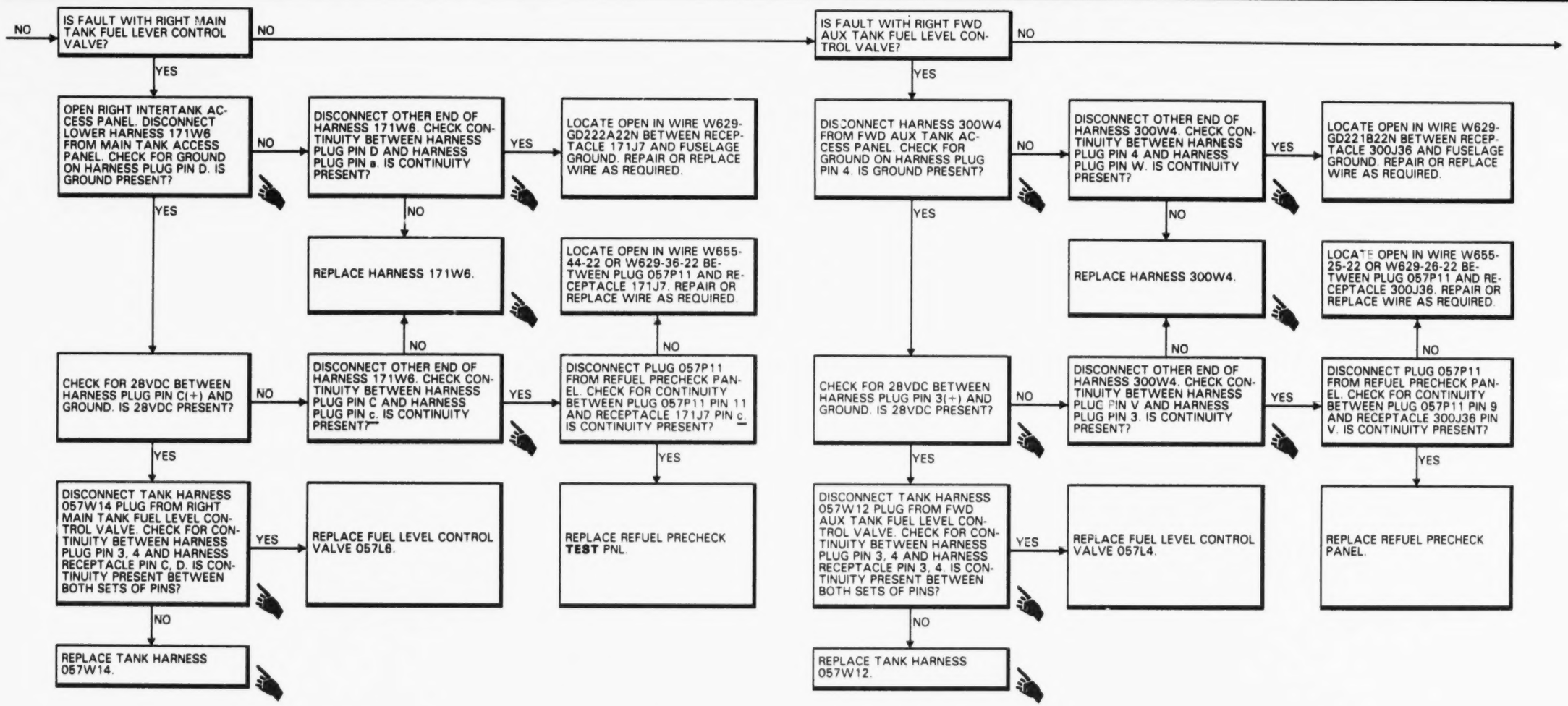
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)


NO
IS FAULT WITH RIGHT MAIN TANK FUEL LEVER CONTROL VALVE?
NO
YES
OPEN RIGHT INTERTANK ACCESS PANEL. DISCONNECT LOWER HARNESS 171W6 FROM MAIN TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN D. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 171W6. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN D AND HARNESS PLUG PIN a. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W629-GD222A22N BETWEEN RECEPTACLE 171J7 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS 171W6.
LOCATE OPEN IN WIRE W655-44-22 OR W629-36-22 BETWEEN PLUG 057P11 AND RECEPTACLE 171J7. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN C(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 171W6. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN C AND HARNESS PLUG PIN c. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 11 AND RECEPTACLE 171J7 PIN c. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK TEST PNL.
YES
DISCONNECT TANK HARNESS 057W14 PLUG FROM RIGHT MAIN TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 3, 4 AND HARNESS RECEPTACLE PIN C, D. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE FUEL LEVEL CONTROL VALVE 057L6.
NO
REPLACE TANK HARNESS 057W14.
IS FAULT WITH RIGHT FWD AUX TANK FUEL LEVEL CONTROL VALVE?
NO
YES
DISCONNECT HARNESS 300W4 FROM FWD AUX TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 4. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 300W4. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 4 AND HARNESS PLUG PIN W. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W629-GD221B22N BETWEEN RECEPTACLE 300J36 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS 300W4.
LOCATE OPEN IN WIRE W655-25-22 OR W629-26-22 BETWEEN PLUG 057P11 AND RECEPTACLE 300J36. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 3(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 300W4. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN V AND HARNESS PLUG PIN 3. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 9 AND RECEPTACLE 300J36 PIN V. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.
YES
DISCONNECT TANK HARNESS 057W12 PLUG FROM FWD AUX TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 3, 4 AND HARNESS RECEPTACLE PIN 3, 4. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE FUEL LEVEL CONTROL VALVE 057L4.
NO
REPLACE TANK HARNESS 057W12.

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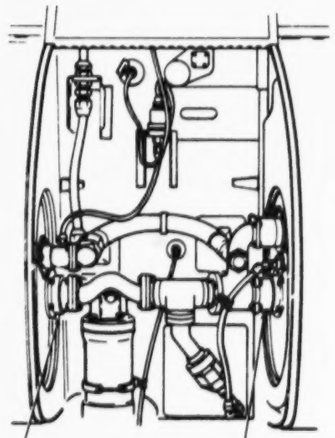
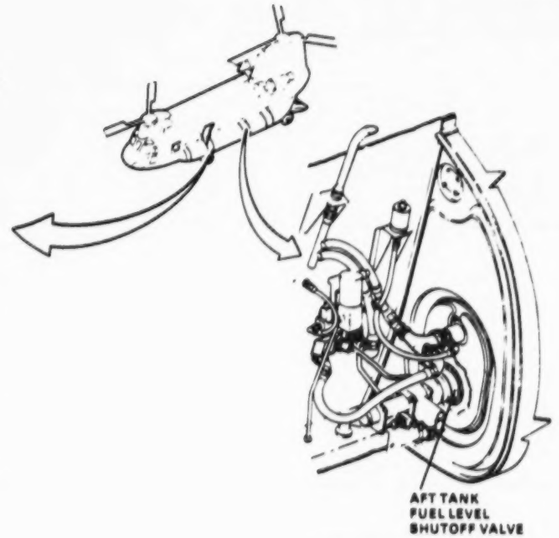
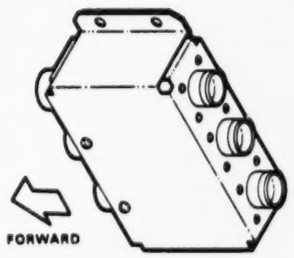
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)

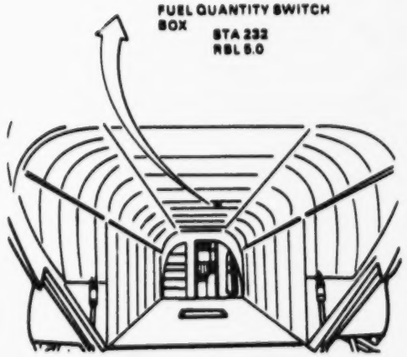


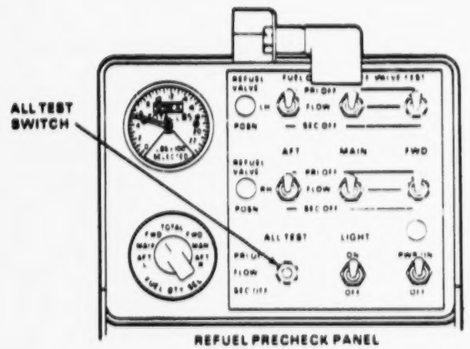


LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR.

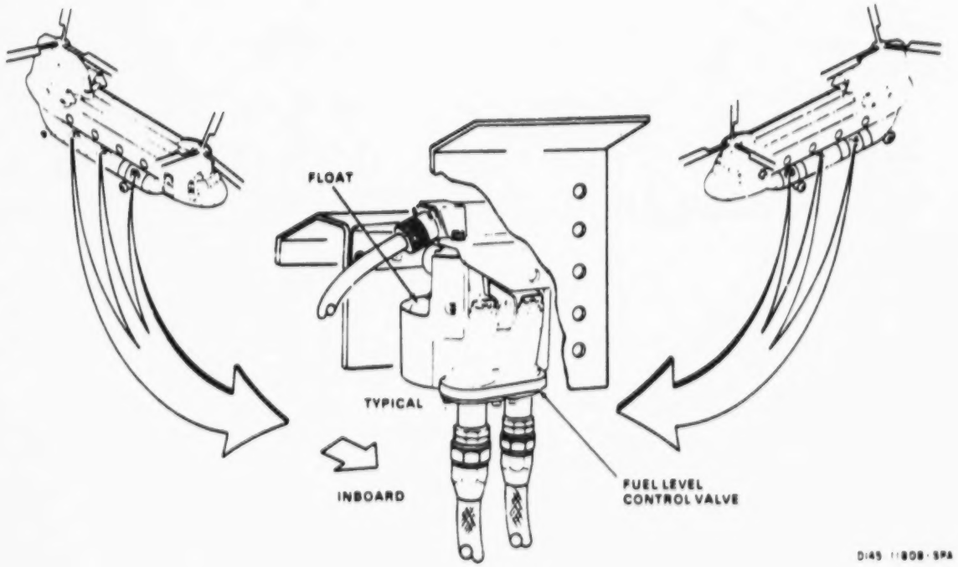


FUEL QUANTITY SWITCH BOX
STA 232
RBL 5.0





REFUEL PRECHECK PANEL



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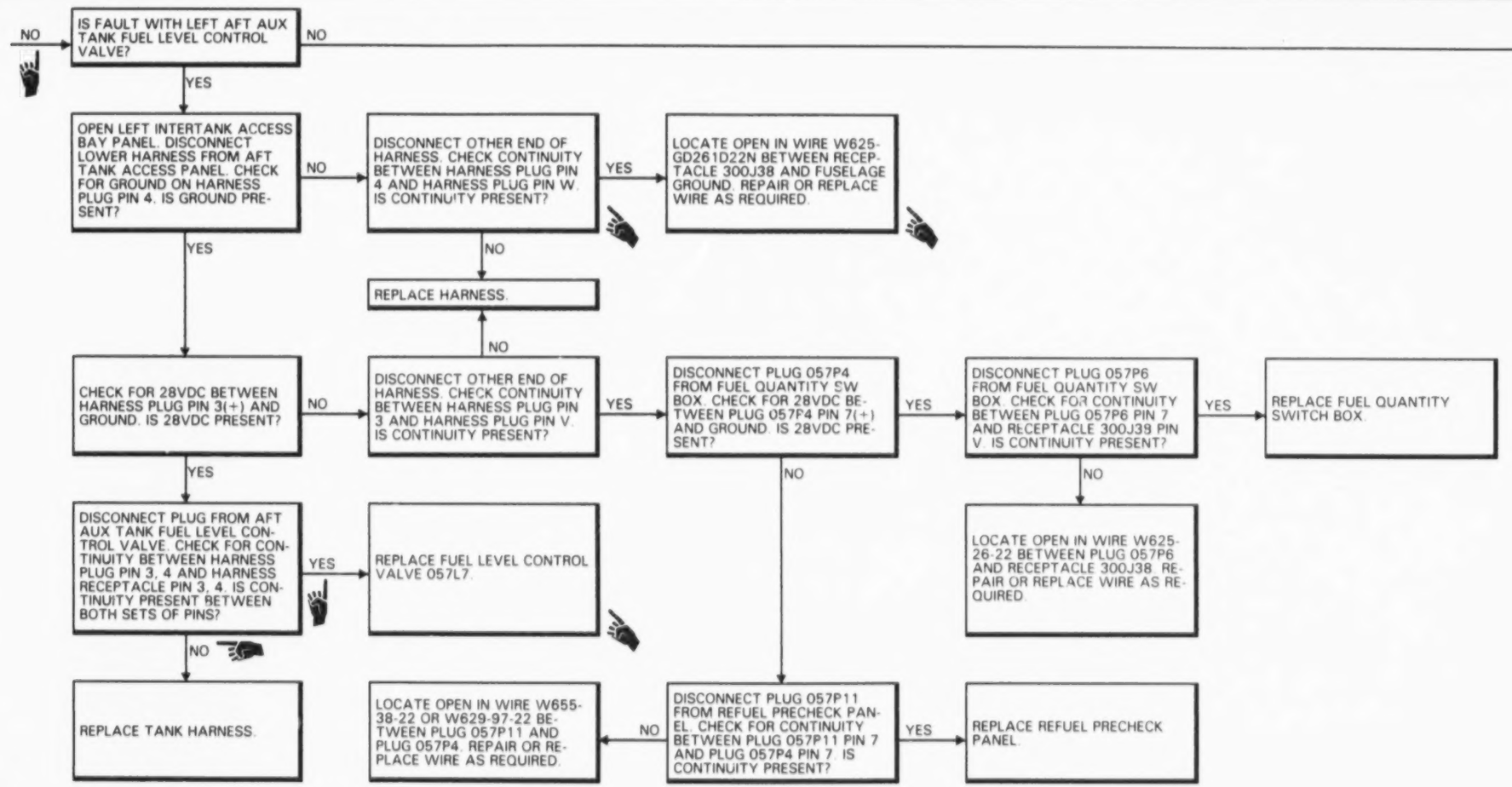
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)


IS FAULT WITH LEFT AFT AUX TANK FUEL LEVEL CONTROL VALVE?
NO
YES
NO
OPEN LEFT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS FROM AFT TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 4. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 4 AND HARNESS PLUG PIN W. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD261D22N BETWEEN RECEPTACLE 300J38 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HARNESS.
YES
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 3(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 3 AND HARNESS PLUG PIN V. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR 28VDC BETWEEN PLUG 057P4 PIN 7(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 7 AND RECEPTACLE 300J39 PIN V. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SWITCH BOX.
YES
DISCONNECT PLUG FROM AFT AUX TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 3, 4 AND HARNESS RECEPTACLE PIN 3, 4. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE FUEL LEVEL CONTROL VALVE 057L7.
NO
REPLACE TANK HARNESS.
NO
LOCATE OPEN IN WIRE W625-26-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J38. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W655-38-22 OR W629-97-22 BETWEEN PLUG 057P11 AND PLUG 057P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 7 AND PLUG 057P4 PIN 7. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.

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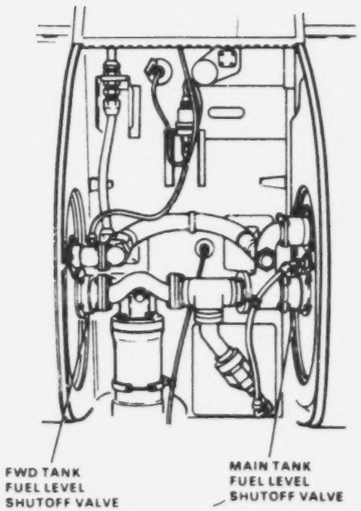
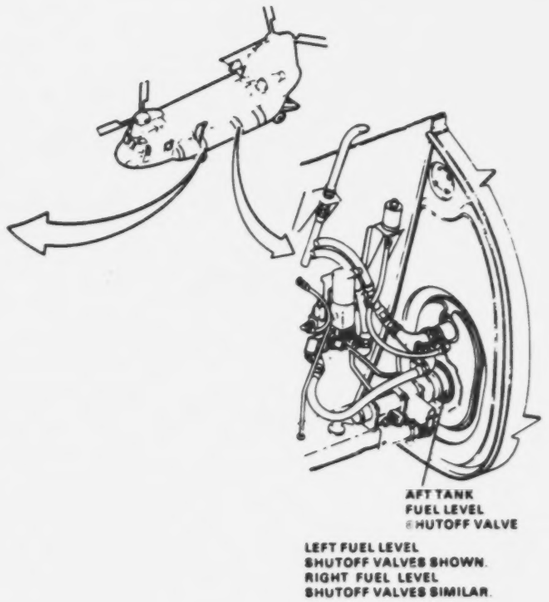
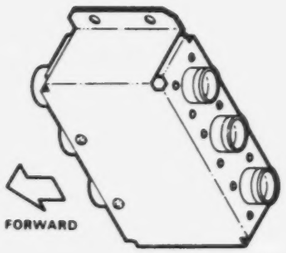
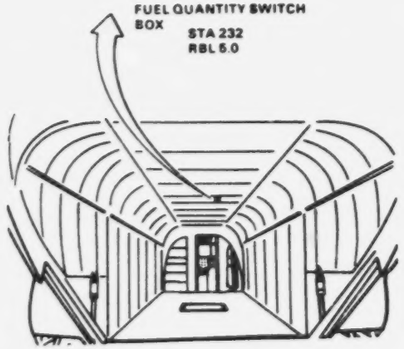
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)

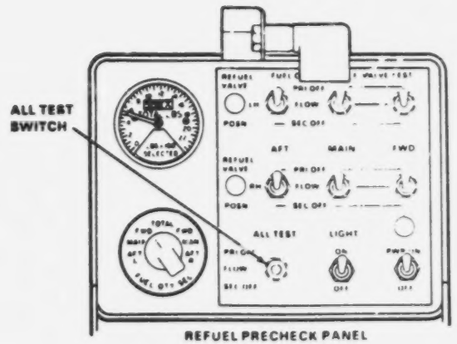


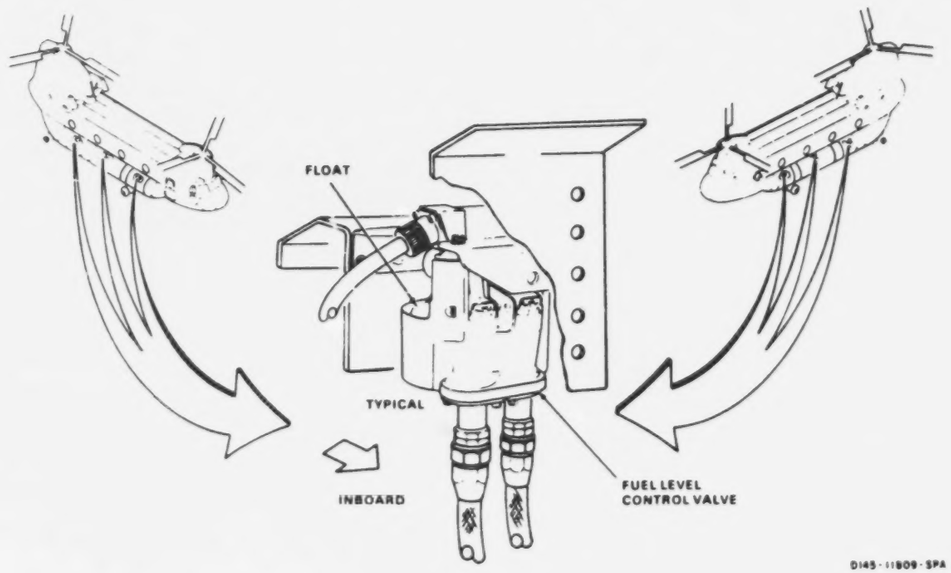




FUEL QUANTITY SWITCH BOX
STA 232
RBL 5.0







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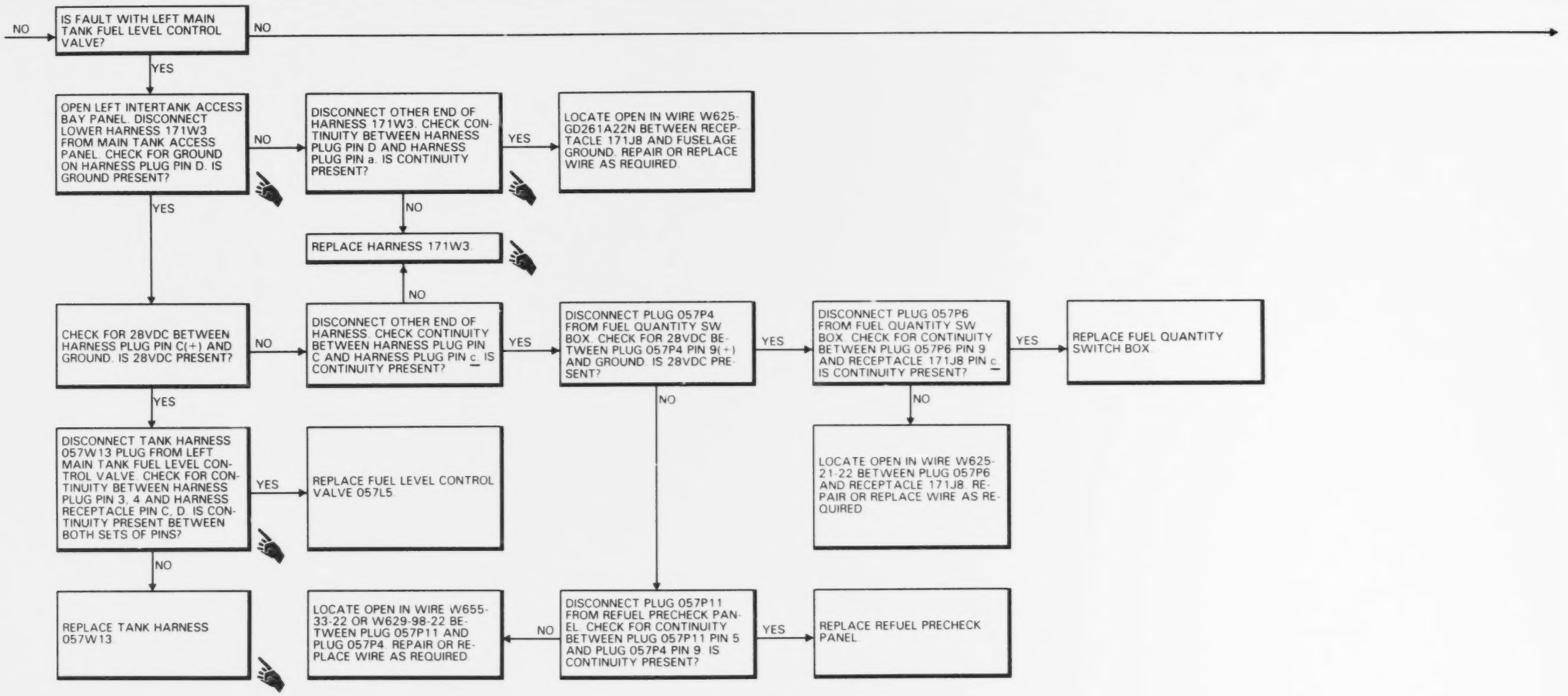
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)


IS FAULT WITH LEFT MAIN TANK FUEL LEVEL CONTROL VALVE?
NO
NO
YES
OPEN LEFT INTERTANK ACCESS BAY PANEL. DISCONNECT LOWER HARNESS 171W3 FROM MAIN TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN D. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 171W3. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN D AND HARNESS PLUG PIN a. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD261A22N BETWEEN RECEPTACLE 171J8 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
NO
REPLACE HARNESS 171W3.
NO
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN C(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN C AND HARNESS PLUG PIN c. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR 28VDC BETWEEN PLUG 057P4 PIN 9(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 9 AND RECEPTACLE 171J8 PIN c. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SWITCH BOX.
YES
NO
NO
DISCONNECT TANK HARNESS 057W13 PLUG FROM LEFT MAIN TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 3, 4 AND HARNESS RECEPTACLE PIN C, D. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE FUEL LEVEL CONTROL VALVE 057L5.
LOCATE OPEN IN WIRE W625-21-22 BETWEEN PLUG 057P6 AND RECEPTACLE 171J8. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE TANK HARNESS 057W13.
LOCATE OPEN IN WIRE W655-33-22 OR W629-98-22 BETWEEN PLUG 057P11 AND PLUG 057P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM REFUEL PRECHECK PANEL. CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 5 AND PLUG 057P4 PIN 9. IS CONTINUITY PRESENT?
YES
REPLACE REFUEL PRECHECK PANEL.

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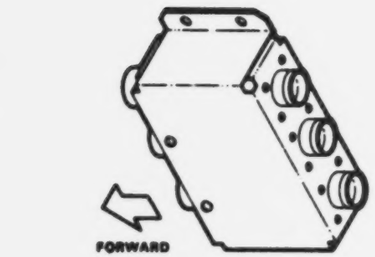
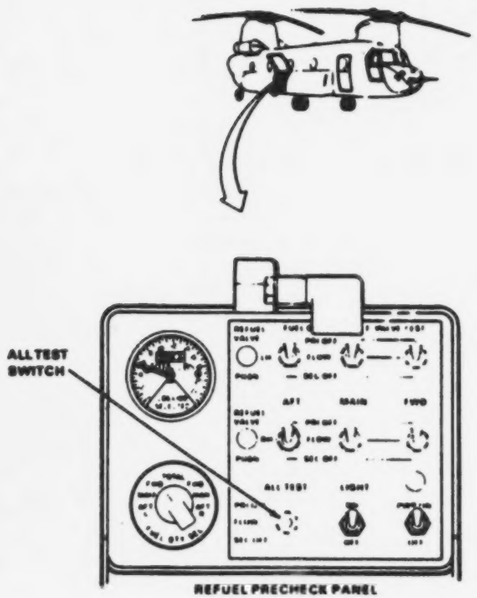
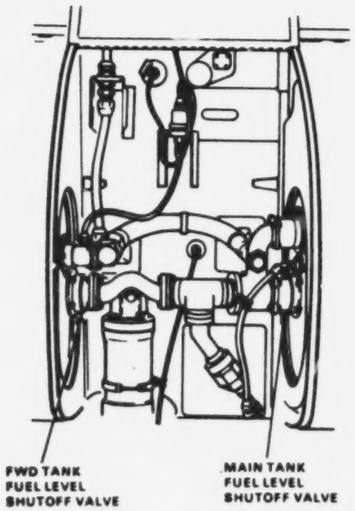
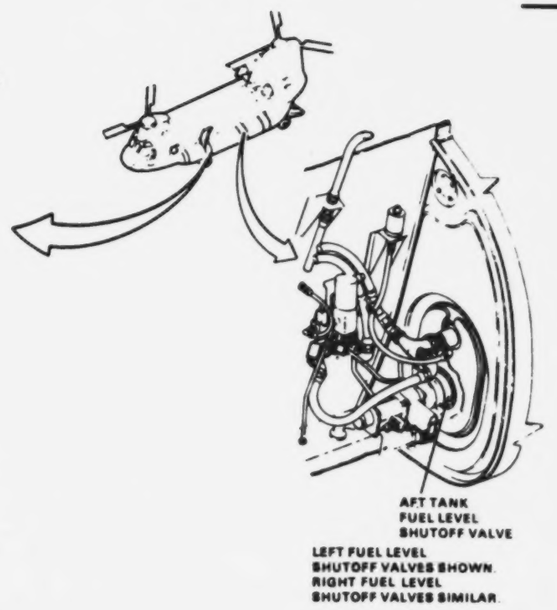
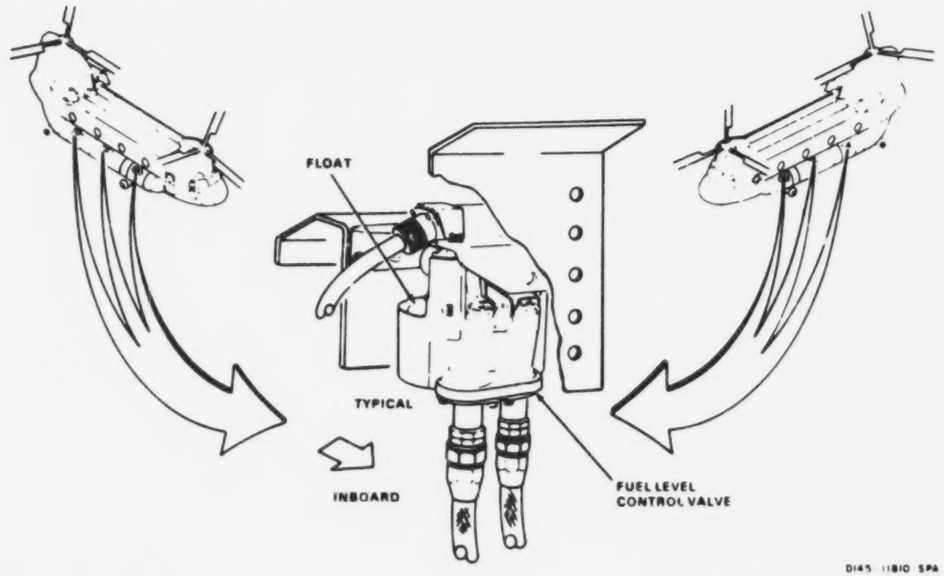
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)











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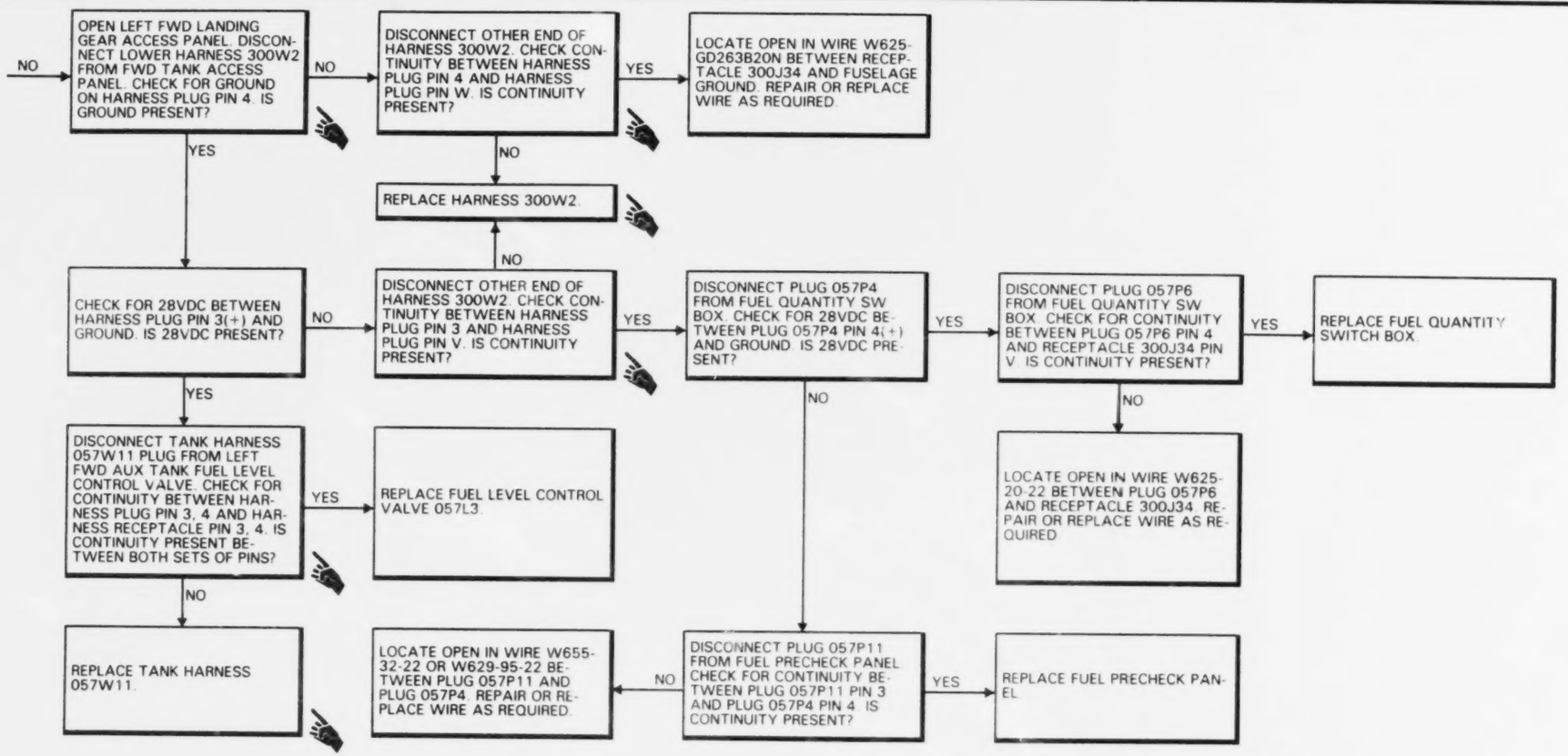
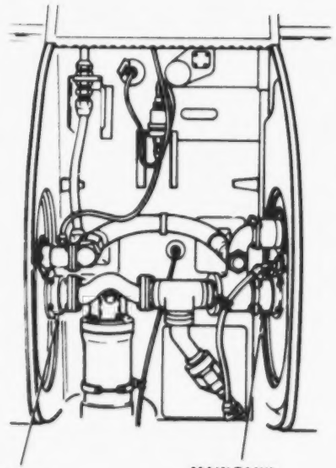
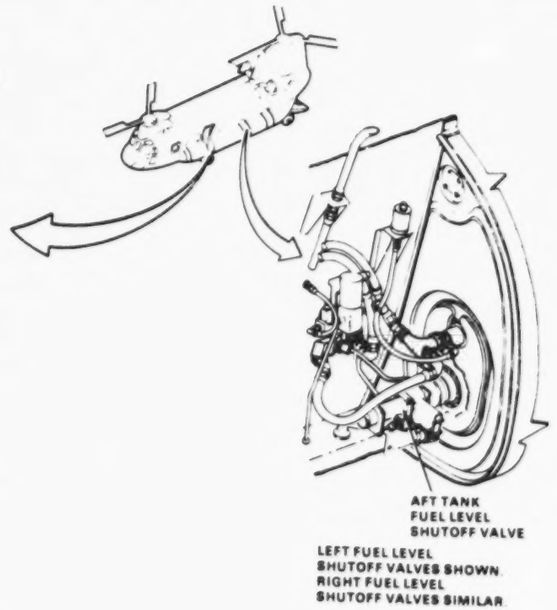
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)

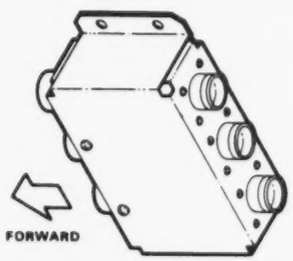

NO
OPEN LEFT FWD LANDING GEAR ACCESS PANEL. DISCONNECT LOWER HARNESS 300W2 FROM FWD TANK ACCESS PANEL. CHECK FOR GROUND ON HARNESS PLUG PIN 4. IS GROUND PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 300W2. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 4 AND HARNESS PLUG PIN W. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W625-GD263B20N BETWEEN RECEPTACLE 300J34 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
NO
REPLACE HARNESS 300W2.
NO
CHECK FOR 28VDC BETWEEN HARNESS PLUG PIN 3(+) AND GROUND. IS 28VDC PRESENT?
NO
DISCONNECT OTHER END OF HARNESS 300W2. CHECK CONTINUITY BETWEEN HARNESS PLUG PIN 3 AND HARNESS PLUG PIN V. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 057P4 FROM FUEL QUANTITY SW BOX. CHECK FOR 28VDC BETWEEN PLUG 057P4 PIN 4(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT PLUG 057P6 FROM FUEL QUANTITY SW BOX. CHECK FOR CONTINUITY BETWEEN PLUG 057P6 PIN 4 AND RECEPTACLE 300J34 PIN V. IS CONTINUITY PRESENT?
YES
REPLACE FUEL QUANTITY SWITCH BOX.
YES
NO
LOCATE OPEN IN WIRE W625-20-22 BETWEEN PLUG 057P6 AND RECEPTACLE 300J34. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT TANK HARNESS 057W11 PLUG FROM LEFT FWD AUX TANK FUEL LEVEL CONTROL VALVE. CHECK FOR CONTINUITY BETWEEN HARNESS PLUG PIN 3, 4 AND HARNESS RECEPTACLE PIN 3, 4. IS CONTINUITY PRESENT BETWEEN BOTH SETS OF PINS?
YES
REPLACE FUEL LEVEL CONTROL VALVE 057L3.
NO
REPLACE TANK HARNESS 057W11.
LOCATE OPEN IN WIRE W655-32-22 OR W629-95-22 BETWEEN PLUG 057P11 AND PLUG 057P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 057P11 FROM FUEL PRECHECK PANEL CHECK FOR CONTINUITY BETWEEN PLUG 057P11 PIN 3 AND PLUG 057P4 PIN 4. IS CONTINUITY PRESENT?
YES
REPLACE FUEL PRECHECK PANEL

GO TO NEXT PAGE

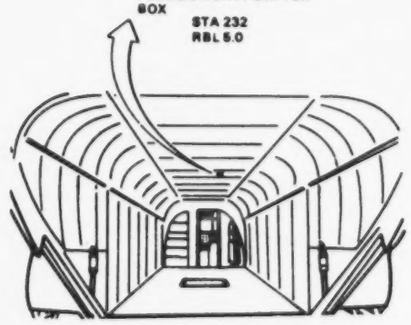
10-3.13 FUEL DOES NOT STOP FLOWING WITHIN 4 SECONDS WITH ALL TEST SWITCH AT SEC OFF (Continued)



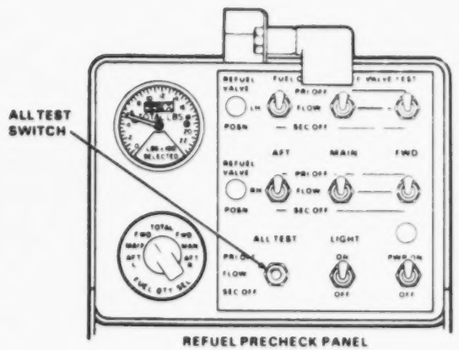




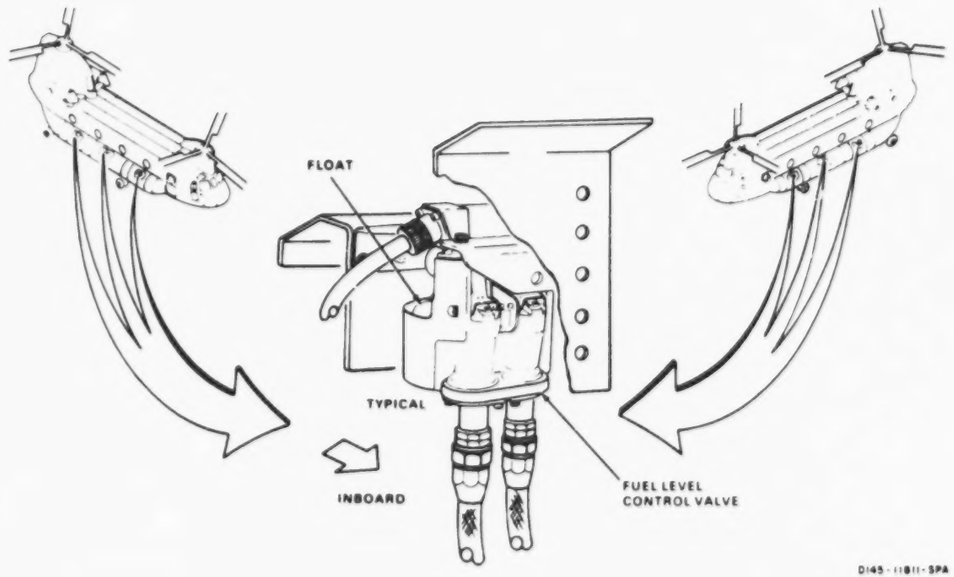
FUEL QUANTITY SWITCH BOX
STA 232
RBL 5.0



90X54



REFUEL PRECHECK PANEL



D145-11811-SPA

END OF TASK

10-3.14 TANK WILL NOT ACCEPT FUEL WHILE PRESSURE REFUELING

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

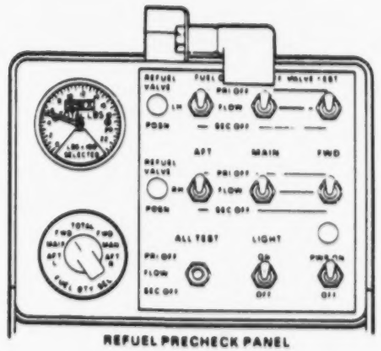
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Multimeter

Materials:
None

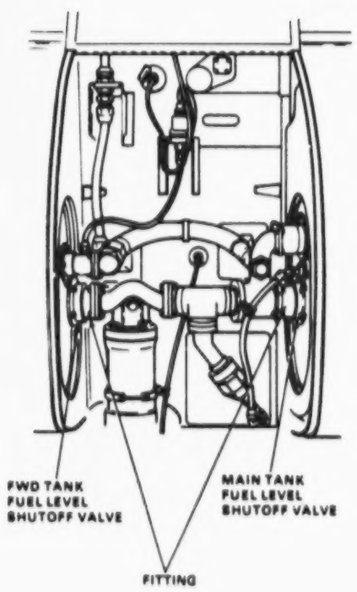
Personnel Required
Medium Helicopter Repairer
Aircraft Electrician

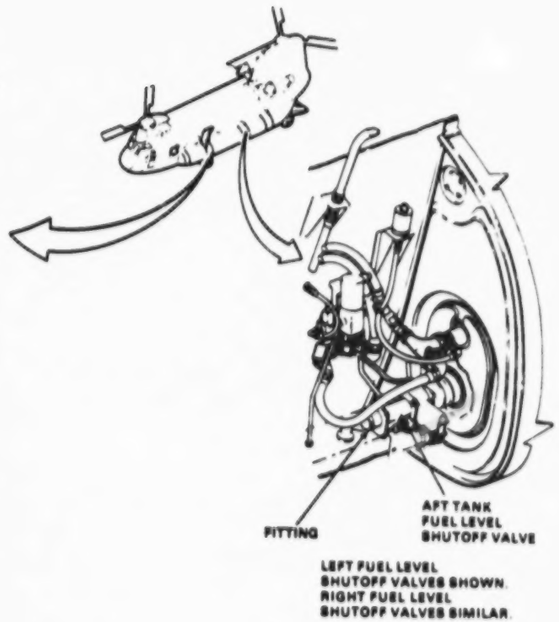
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Aircraft Being Refueled

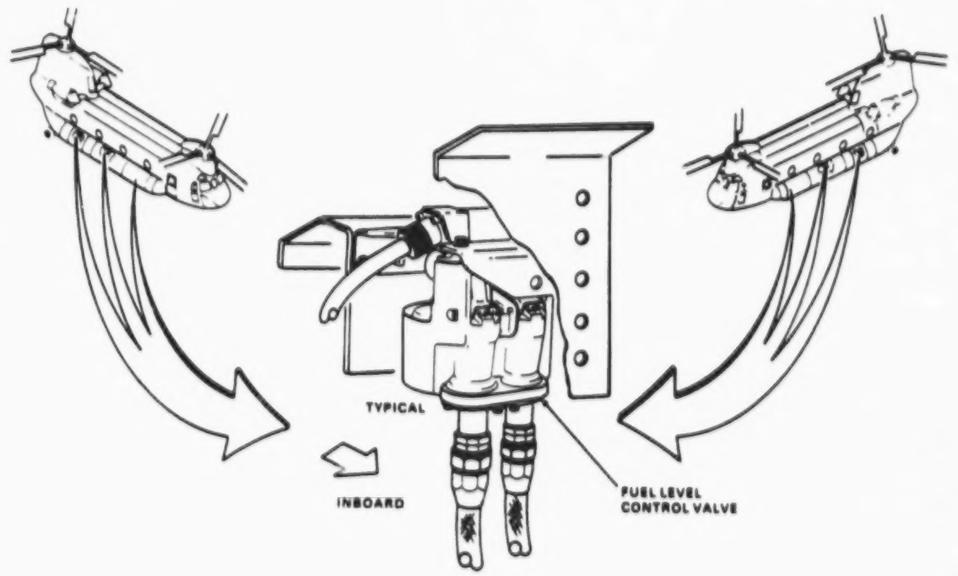


REFUEL PRECHECK PANEL





LEFT FUEL LEVEL SHUTOFF VALVES SHOWN. RIGHT FUEL LEVEL SHUTOFF VALVES SIMILAR.



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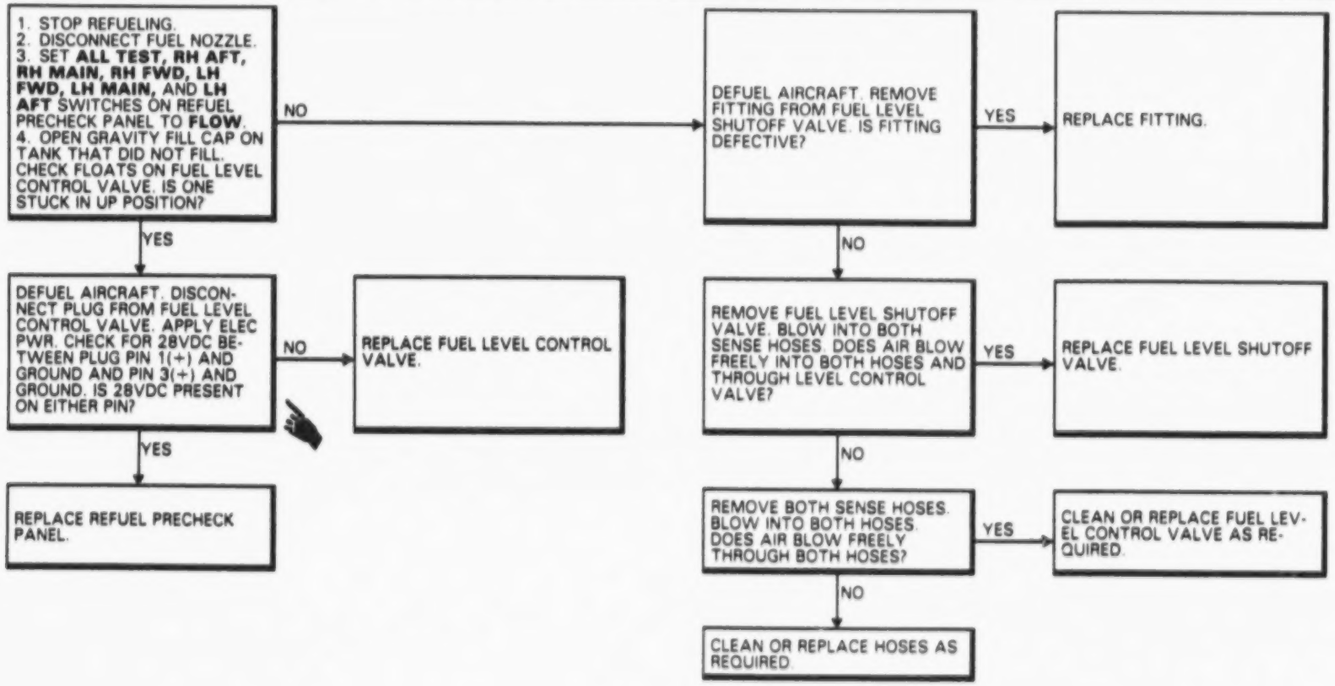
10-3.14 TANK WILL NOT ACCEPT FUEL WHILE PRESSURE REFUELING (Continued)


1. STOP REFUELING.
2. DISCONNECT FUEL NOZZLE.
3. SET **ALL TEST, RH AFT, RH MAIN, RH FWD, LH FWD, LH MAIN,** AND **LH AFT** SWITCHES ON REFUEL PRECHECK PANEL TO **FLOW**.
4. OPEN GRAVITY FILL CAP ON TANK THAT DID NOT FILL. CHECK FLOATS ON FUEL LEVEL CONTROL VALVE. IS ONE STUCK IN UP POSITION?
NO
YES
DEFUEL AIRCRAFT. DISCONNECT PLUG FROM FUEL LEVEL CONTROL VALVE. APPLY ELEC PWR. CHECK FOR 28VDC BETWEEN PLUG PIN 1(+) AND GROUND AND PIN 3(+) AND GROUND. IS 28VDC PRESENT ON EITHER PIN?
NO
REPLACE FUEL LEVEL CONTROL VALVE.
YES
REPLACE REFUEL PRECHECK PANEL.
DEFUEL AIRCRAFT. REMOVE FITTING FROM FUEL LEVEL SHUTOFF VALVE. IS FITTING DEFECTIVE?
YES
REPLACE FITTING.
NO
REMOVE FUEL LEVEL SHUTOFF VALVE. BLOW INTO BOTH SENSE HOSES. DOES AIR BLOW FREELY INTO BOTH HOSES AND THROUGH LEVEL CONTROL VALVE?
YES
REPLACE FUEL LEVEL SHUTOFF VALVE.
NO
REMOVE BOTH SENSE HOSES. BLOW INTO BOTH HOSES. DOES AIR BLOW FREELY THROUGH BOTH HOSES?
YES
CLEAN OR REPLACE FUEL LEVEL CONTROL VALVE AS REQUIRED.
NO
CLEAN OR REPLACE HOSES AS REQUIRED.

END OF TASK

CHAPTER 11
FLIGHT CONTROLS SYSTEMS TROUBLESHOOTING

CHAPTER 11
FLIGHT SYSTEM TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 11 contains procedures for Flight System troubleshooting. Each system and failure symptom is listed below. Included in this chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for the Flight System.

Refer to TM 55-1520-240-23 for required maintenance procedures.

SYSTEM	PARA
FLIGHT CONTROL SYSTEM	11-1
ARTIFICIAL FEEL — MAGNETIC BRAKES	11-2
ADVANCED FLIGHT CONTROLS SYSTEM (AFCS)	11-3

SYSTEM	PARA
AFCS CONTROL PANEL	11-4
AFCS COMPUTER	11-5
COCKPIT CONTROL DRIVE ACTUATOR (CCDA)	11-6

FAILURE SYMPTOM LIST

ARTIFICIAL FEEL — MAGNETIC BRAKES

SYMPTOM	TASK
CONT CENTER CIRCUIT BREAKER DOES NOT STAY CLOSED	11-2.3
CONTROL STICK AND PEDALS WILL NOT STAY CENTERED AFTER PILOT'S CENTERING DEVICE RELEASE SWITCH RELEASED	11-2.3
CONTROL STICK DOES NOT REMAIN AT SELECTED POSITION	11-2.3
CONTROL STICK WILL NOT REMAIN AT SELECTED POSITION AFTER COPILOT'S CENTERING DEVICE RELEASE SWITCH RELEASED	11-2.3
COPILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION	11-2.3
PEDALS DO NOT REMAIN AT SELECTED POSITION	11-2.3
PILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION	11-2.3
THRUST BRAKE CIRCUIT BREAKER DOES NOT STAY CLOSED	11-2.3

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FAILURE SYMPTOM LIST (Continued)

ADVANCED FLIGHT CONTROLS SYSTEM

SYMPTOM	TASK
AFCS BITE OPERATES WITH ENGINE CONDITION LEVER IN FLIGHT POSITION	11-3.3
AFCS COMPUTER BITE INDICATES 48	11-3.3
AFCS COMPUTER BITE INDICATES 6, 9, OR 18	11-3.3
AFCS COMPUTER BITE INDICATES 70-74	11-3.3
AFCS COMPUTER BITE INDICATES 95	11-3.3
AFCS HEADING HOLD WEAK OR INOPERATIVE	11-3.3
AFCS LONGITUDINAL CONTROL POSITION OUT OF TRIM	11-3.3
AFT LCT INDICATOR DOES NOT SHOW EXTENSION OR RETRACTION IN MANUAL CONTROL	11-3.3
AFT LCT INDICATOR NOT IN GND POSITION	11-3.3
AFCS LATERAL STICK ONLY TURNS NOT COORDINATED	11-3.3
AFCS NO. 1 DC CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
AFCS NO. 2 DC CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
AFCS PITCH STABILIZATION ERRATIC OR OSCILLATORY	11-3.3
AFCS ROLL STABILIZATION ERRATIC/OSCILLATORY OR ROLL ATTITUDE HOLD WEAK OR INOPERATIVE	11-3.3
BAROMETRIC ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC (RADAR ATTITUDE HOLD OKAY)	11-3.3
BAROMETRIC AND RADAR ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC	11-3.3
BOTH LCT INDICATORS NOT IN GROUND POSITION	11-3.3
CLTV DRIVER ACTR AC CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
CLTV DRIVER ACTR CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
CYCLIC TRIM AFT ACTR CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
CYCLIC TRIM FWD ACTR CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
CYCLIC TRIM MNL CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
FORWARD LCT INDICATOR DOES NOT INDICATE EXTEND OR RETRACT DURING MANUAL CONTROL	11-3.3
FORWARD LCT INDICATOR NOT IN GND POSITION	11-3.3
HDG SWITCH ENGAGE CAPTION DOES NOT LIGHT	11-3.3
HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE (BOTH SYSTEMS)	11-3.3
NO. 1 AFCS AC CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
NO. 1 AFCS COMPUTER BITE INDICATES 85 OR 86	11-3.3
NO. 1 AFCS COMPUTER BITE INDICATES 87	11-3.3
NO. 1 AFCS COMPUTER BITE INDICATES 89	11-3.3
NO. 1 AFCS COMPUTER BITE SWITCH DOES NOT LIGHT AND COUNTER DOES NOT STOP WHEN BITE SWITCH PRESSED AND RELEASED	11-3.3
NO. 1 AFCS HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE	11-3.3
NO. 1 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED	11-3.3
NO. 1 AFCS OFF CAPSULE IS OUT WITH SYSTEM SELECTED OFF	11-3.3
NO. 1 AFCS PITCH ATTITUDE/AIR SPEED HOLD WEAK OR INOPERATIVE	11-3.3
NO. 1 AFCS YAW STABILITY ERRATIC/OSCILLATORY	11-3.3
NO. 1 PITCH ILCA HAS ENGAGE TRANSIENT	11-3.3
NO. 1 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION	11-3.3
NO. 1 ROLL ILCA DOES NOT MOVE WHEN PILOT'S PITCH AND ROLL TRIM SWITCH MOVED RIGHT OR LEFT	11-3.3
NO. 1 ROLL ILCA HAS ENGAGE TRANSIENT	11-3.3

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FAILURE SYMPTOM LIST (Continued)

ADVANCED FLIGHT CONTROLS SYSTEM (Continued)

SYMPTOM	TASK
NO. 1 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED	11-3.3
NO. 1 YAW ILCA HAS ENGAGE TRANSIENT	11-3.3
NO. 2 AFCS AC CIRCUIT BREAKER WILL NOT STAY CLOSED	11-3.3
NO. 2 AFCS COMPUTER BITE INDICATES 85 OR 86	11-3.3
NO. 2 AFCS COMPUTER BITE INDICATES 89	11-3.3
NO. 2 AFCS COMPUTER BITE SWITCH DOES NOT LIGHT AND COUNTER DOES NOT STEP WHEN BITE SWITCH IS PRESSED AND RELEASED	11-3.3
NO. 2 AFCS HEADING SELECT MOVE RESPONSE WEAK OR INOPERATIVE	11-3.3
NO. 2 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED	11-3.3
NO. 2 AFCS OFF CAPSULE IS OUT WITH SYSTEM SELECTED OFF	11-3.3
NO. 2 AFCS PITCH ATTITUDE/AIR SPEED HOLD WEAK OR INOPERATIVE	11-3.3
NO. 2 AFCS YAW STABILITY ERRATIC/OSCILLATORY	11-3.3
NO. 2 PITCH ILCA HAS ENGAGE TRANSIENT	11-3.3
NO. 2 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION	11-3.3
NO. 2 ROLL ILCA DOES NOT MOVE WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH MOVED RIGHT OR LEFT	11-3.3
NO. 2 ROLL ILCA HAS ENGAGE TRANSIENT	11-3.3
NO. 2 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED	11-3.3
NO. 2 YAW ILCA HAS ENGAGE TRANSIENT	11-3.3
PITCH AND ROLL CONTROL STICK DOES NOT MOVE FORWARD OR AFT WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH IS MOVED FORWARD AND AFT	11-3.3
RADAR ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC (BAROMETRIC ALTITUDE HOLD OKAY)	11-3.3
RADAR OR BARO ALT ENGAGED CAPTIONS DO NOT COME ON WHEN PRESSED	11-3.3

AFCS CONTROL PANEL

SYMPTOM	TASK
AFCS CONTROL PANEL FAILS BAROMETRIC ALTITUDE TESTS	11-4.2
AFCS CONTROL PANEL FAILS CYCLIC TRIM — AUTOMATIC TEST	11-4.2
AFCS CONTROL PANEL FAILS CYCLIC TRIM MANUAL TEST	11-4.2
AFCS CONTROL PANEL FAILS DIODE TEST	11-4.2
AFCS CONTROL PANEL FAILS HEADING TEST	11-4.2
AFCS CONTROL PANEL FAILS PANEL ILLUMINATION TEST	11-4.2
AFCS CONTROL PANEL FAILS RADAR ALTITUDE TESTS	11-4.2
AFCS CONTROL PANEL FAILS SYSTEMS SELECT TEST	11-4.2

CHAPTER 11
FLIGHT CONTROLS SYSTEMS TROUBLESHOOTING

CHAPTER OVERVIEW (Continued)

FAILURE SYMPTOM LIST (Continued)

AFCS COMPUTER

SYMPTOM	TASK
AFCS COMPUTER FAILS TEST 1 (CONTINUITY TEST)	11-5.2
AFCS COMPUTER FAILS TEST 2 (POWER SUPPLY TEST)	11-5.2
AFCS COMPUTER FAILS TEST 3 (LOGIC TEST)	11-5.2
AFCS COMPUTER FAILS TEST 4 (PITCH AXIS TEST)	11-5.2
AFCS COMPUTER FAILS TEST 5 (ROLL AXIS TEST)	11-5.2
AFCS COMPUTER FAILS TEST 6 (YAW AXIS TEST)	11-5.2
AFCS COMPUTER FAILS TEST 7 (DASH TEST)	11-5.2
AFCS COMPUTER FAILS TEST 8 (LONGITUDINAL CYCLIC TRIM (LCT) TEST)	11-5.2
AFCS COMPUTER FAILS TEST 9 (COLLECTIVE CONTROL DRIVER ACTUATOR (CCDA) TEST)	11-5.2
AFCS COMPUTER FAILS TEST 10 (YAW RATE TEST)	11-5.2
AFCS COMPUTER FAILS TEST 11 (NORMAL ACCELERATION TEST)	11-5.2
AFCS COMPUTER FAILS TEST 12 (PRESSURE TRANSDUCERS TEST)	11-5.2
AFCS COMPUTER FAILS TEST 13 (BITE TEST)	11-5.2

FAILURE SYMPTOM LIST (Continued)

COCKPIT CONTROL DRIVE ACTUATOR (CCDA)

SYMPTOM	TASK
PITCH COCKPIT CONTROL DRIVE ACTUATOR FAILS BRAKE FUNCTION TEST	11-6.2
PITCH COCKPIT CONTROL DRIVE ACTUATOR FAILS CIRCUIT RESISTANCE TEST	11-6.2
PITCH COCKPIT CONTROL DRIVE ACTUATOR FAILS TRIM MOTOR TEST	11-6.2
THRUST COCKPIT CONTROL DRIVE ACTUATOR FAILS BRAKE FUNCTION TEST	11-6.2
THRUST COCKPIT CONTROL DRIVE ACTUATOR FAILS CIRCUIT RESISTANCE TEST	11-6.2
THRUST COCKPIT CONTROL DRIVE ACTUATOR FAILS NULL VOLTAGE AND PHASING TEST	11-6.2

FLIGHT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

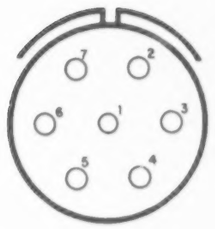
REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
009		150	CONSOLE, FWD CTR INSTR PNL			
040		150	CONSOLE, FWD CTR INSTR PNL			
131		151	RH AFT CABIN	485	-5	50R
GD217		151	CONTROLS CLOSET	110	15	18L
GD218		151	CONTROLS CLOSET	110	15	18L
GD220		151	CONTROLS CLOSET	110	15	18L
GD223		151	CONTROLS CLOSET	110	15	18L
GD224		151	CONTROLS CLOSET	117	30	18L
GD228		151	FWD XMSN AREA	105	45	20L
GD229		151	FWD XMSN AREA	105	45	20L
GD230		151	ELECTRONIC COMP	110	15	50L
GD231		151	ELECTRONIC COMP	110	15	50L
GD250		151	ELECTRONIC COMP	115	10	18L
GD251		151	RH POD	256	-10	52R
GD252		151	ELECTRONIC COMP	115	10	18L
GD253		151	ELECTRONIC COMP	110	15	50L
GD254		151	RH POD	258	-10	52R
GD255		151	ELECTRONIC COMP	110	15	18L
GD258		151	LH AFT, CABIN	502	-20	50L
TB 18			COCKPIT, UNDERFLOOR, CPLT			
TB 52			ELECTRONIC COMP	95	14	246
TB 53			ELECTRONIC COMP	95	14	30L
148K1		103	LH AFT CABIN	482	20	50L
148K2		103	RH AFT CABIN	482	20	50R
031J1	MS3470W12-10S	17	PYLON, AFT CYCLIC PITCH ACT	528	130	12L
031J2	MS3474W10-6S	15	CONTROLS CLOSET	118	-25	22L
031J5	MS3474W10-6S	15	CONTROLS CLOSET	118	-25	22L
031J6	MS3474W10-6S	15	CONTROLS CLOSET	118	-25	26L
031J9	MS3474W10-6S	15	CONTROLS CLOSET	118	-25	24L
031J11	MS3474W10-6S	15	CONTROLS CLOSET	95	-10	18L
031J12	MS3474W10-6S	15	CONTROLS CLOSET	95	-10	18L
031J21	MS3119E12-10	17	FWD XMSN AREA, FWD CYCLIC PITCH ACT	100	65	12L
031P3	MS3476W24-61SX	28	ELECTRONICS COMP, NO. 1 AFCS, J3			
031P4	MS3476W24-61SX	28	ELECTRONICS COMP, NO. 2 AFCS, J3			
031P7	MS3476W14-19SX	21	CONSOLE, AFCS CONTROL PNL			
031P8	MS3476W24-61S	28	ELECTRONICS COMP, NO. 1 AFCS, J1			
031P10	MS3476W24-61S	28	ELECTRONICS COMP, NO. 2 AFCS, J1			
031P13	M83723-95A1415N	34	CONTROLS CLOSET, PITCH LWR CONT ACT			
031P14	M83723-95A1415N	34	CONTROLS CLOSET, PITCH LWR CONT ACT			
031P15	M83723-95A1415N	34	CONTROLS CLOSET, ROLL LWR CONT ACT			
031P16	M83723-95A1415N	34	CONTROLS CLOSET, ROLL LWR CONT ACT			
031P17	M83723-95A1415N	34	CONTROLS CLOSET, YAW LWR CONT ACT			
031P18	M83723-95A1415N	34	CONTROLS CLOSET, YAW LWR CONT ACT			
031P19	M83723-95A1212N	31	CONTROLS CLOSET, DUAL DIFF A/S HOLD ACT			
031P20	M83723-95A1212N	31	CONTROLS CLOSET, DUAL DIFF A/S HOLD ACT			
031P22	MS3476W14-19S	21	CONT CLOSET, CLTV CONT DR ACTR	95	-2	15L
031P26	M83723-95A0803N	29	CONT CLOSET, ROLL MAG BRAKE	120	-10	15L
031P27	MS3476W14-19S	21	CONT CLOSET, PITCH CCDA	120	0	15L
031P28	M83723-95A0803N	29	CONT CLOSET, YAW MAG BRAKE	95	8	15L
031P32	MS3147E7-50S	9	CONSOLE, CTR INSTR PNL, FWD CYCLIC TRIM IND			
031P33	MS3147E7-50S	9	CONSOLE, CTR INSTR PNL, AFT CYCLIC TRIM IND			
031P34	M83723-75A1212N	31	ELECTRONICS COMP, ROLL ERECT CUT-OUT RLY			
031P35	M83723-75A1212N	31	ELECTRONICS COMP, ROLL ERECT CUT-OUT RLY			
031P36	MS3476W14-19S	21	CONSOLE, AFCS CONT PNL			
062P3	MS3476W16-26S	24	ELECTRONICS COMP, 3RD SHLF, CPLT GYRO			
062P4	MS3476W16-26S	24	ELECTRONICS COMP, 2ND SHLF, PLT GYRO			
102P5	MS3476W14-19SW	21	OVHD PNL, ENG COND CONT PNL			
148J1	MS3474W10-6S	15	RH AFT RAMP AREA	485	-30	52R
148P1	MS3476W10-6P	15	RH AFT LDG GEAR COMP	485	-30	52R
148J2	MS3474W10-6S	15	LH AFT RAMP AREA	485	-30	52L
148P2	MS3476W10-6P	15	LH AFT LDG GEAR COMP	485	-30	52L
232P1	MS3476W20-41S	26	CONSOLE, CTR INSTR PNL, MSTR CAUTION PNL			

FLIGHT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
300J2	M83723-74A2255N	42	NO. 1 PDP			
300P2	M83723-75A2255N	42	NO. 1 PDP			
300J3	M83723-74A22556	42	NO. 1 PDP			
300P3	M83723-75A22556	42	NO. 1 PDP			
300J4	M83723-74A2461N	43	NO. 1 PDP			
300P4	M83723-75A2461N	43	NO. 1 PDP			
300J7	M83723-74A2255N	42	NO. 2 PDP			
300P7	M83723-75A2255N	42	NO. 2 PDP			
300J8	M83723-74A2461N	42	NO. 2 PDP			
300P8	M83723-75A2461N	42	NO. 2 PDP			
300J21	M83723-74A2461N	43	OVERHEAD PANEL — COCKPIT			
300P21	M83723-75A2461N	43	OVERHEAD PANEL — COCKPIT			
300J25	MS3474W16-26S	24	COCKPIT, UNDERFLOOR, PLT SIDE	70	-20	12R
300P25	MS3476W16-26P	24	COCKPIT, UNDERFLOOR, PLT SIDE	70	-20	12R
300J26	MS3474W16-26S	24	COCKPIT, UNDERFLOOR, CPLT SIDE	70	-30	40L
300P26	MS3476W16-26P	24	COCKPIT, UNDERFLOOR, CPLT SIDE	70	-30	40L
300J29	MS3474W14-19S	21	COCKPIT, UNDERFLOOR, PLT SIDE	65	-27	25R
300P29	MS3476W14-19P	21	COCKPIT, UNDERFLOOR, PLT SIDE	65	-27	25R
300J30	MS3474W14-19S	21	COCKPIT, UNDERFLOOR, CPLT SIDE	70	-27	25L
300J44	M83723-74A2461N	43	AFT PYLON	520	72	15L
300P44	M83723-75A2461N	43	AFT PYLON	520	72	15L
300J45	M83723-73A2461N	43	HEATER COMPARTMENT	105	40	30R
300P45	M83723-76A2461N	43	HEATER COMPARTMENT	105	40	30R
300J50	M83723-73A2461N	43	ELECTRONICS COMPARTMENT	120	40	20L
300P50	M83723-76A2461N	43	ELECTRONICS COMPARTMENT	120	40	20L
300J51	M83723-74A2461N	43	AFT CROWN — OVHD	460	45	20R
300P51	M83723-75A2461N	43	AFT CROWN — OVHD	460	45	20R
300J54	M83723-74A2461N	43	AFT CROWN — OVHD	460	50	20L
300P54	M83723-75A2461N	43	AFT CROWN — OVHD	460	50	20L
300J58	M83723-73A22558	42	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300P58	M83723-76A22558	42	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300J59	M83723-74A22556	42	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300P59	M83723-75A22556	42	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300J60	M83723-74A22557	42	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300P60	M83723-75A22557	42	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300J61	M83723-73A24619	43	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	
300P61	M83723-76A24619	43	CONSOLE — UNDERFLOOR DISCONNECT	85	-20	

FLIGHT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE



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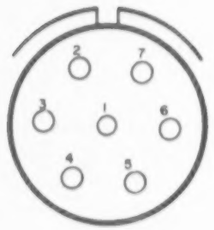

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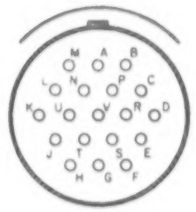

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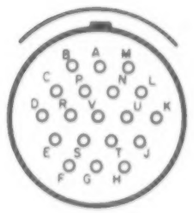

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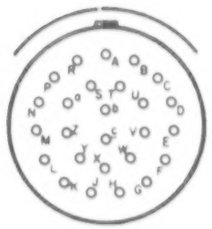

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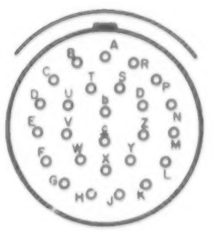

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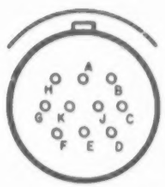

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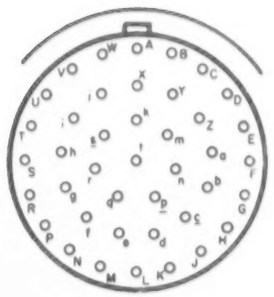

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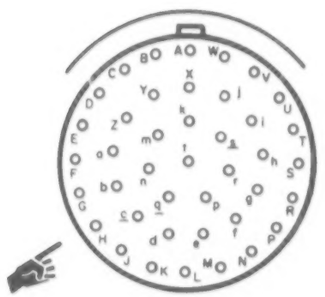

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FLIGHT CONTROLS SYSTEMS ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

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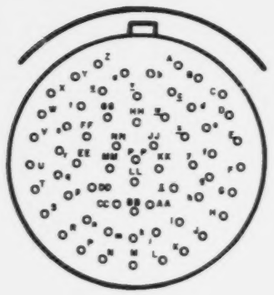

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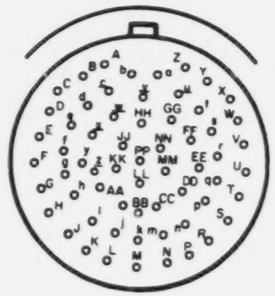

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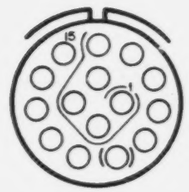

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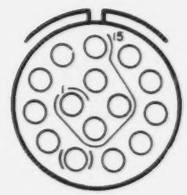

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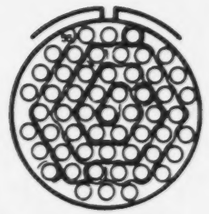

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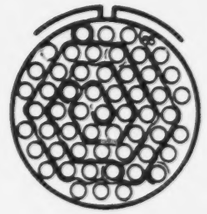

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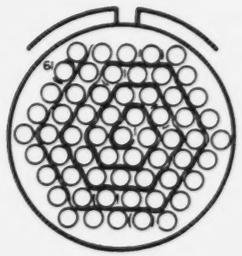

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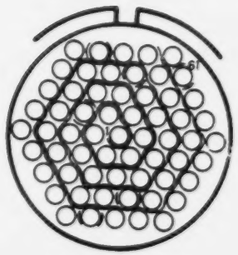

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FLIGHT CONTROLS SYSTEMS ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

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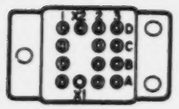

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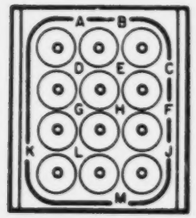
GND MODULE



150

GND STUD

151

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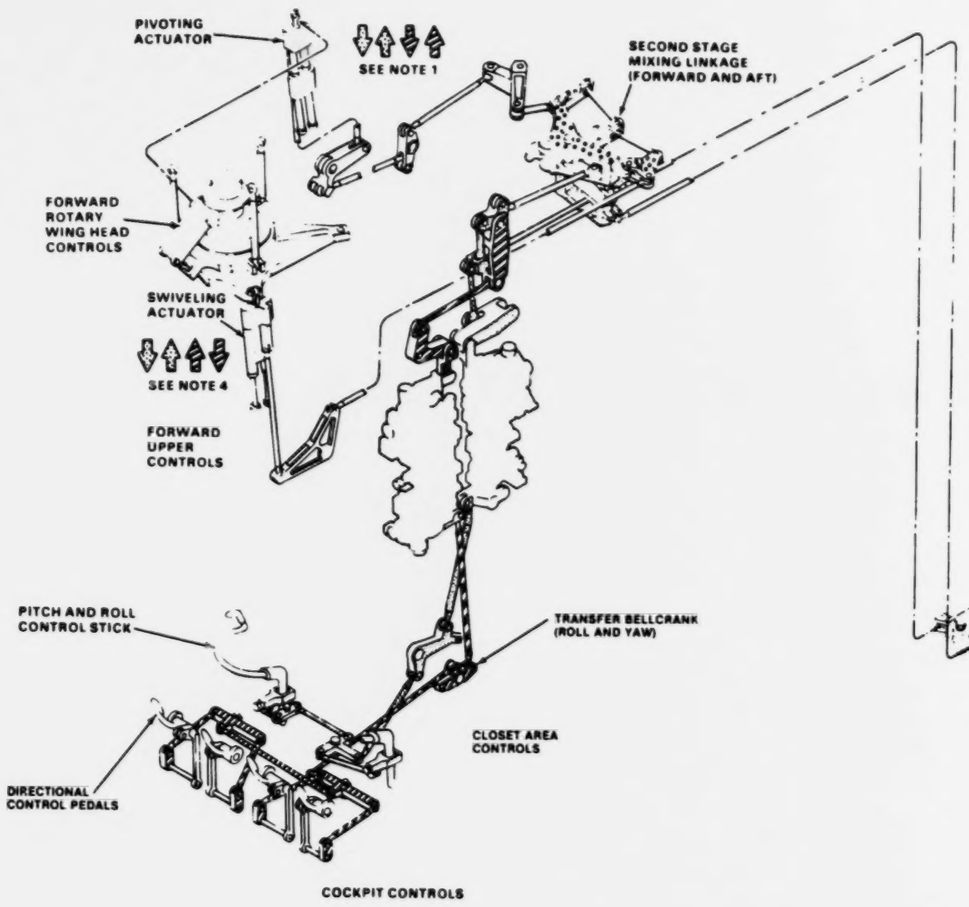
11-1 FLIGHT CONTROL SYSTEM

11-1 FLIGHT CONTROL SYSTEM

11-1.1 FLIGHT CONTROL SYSTEM SCHEMATIC



ROLL AND YAW FLIGHT CONTROL

90-54

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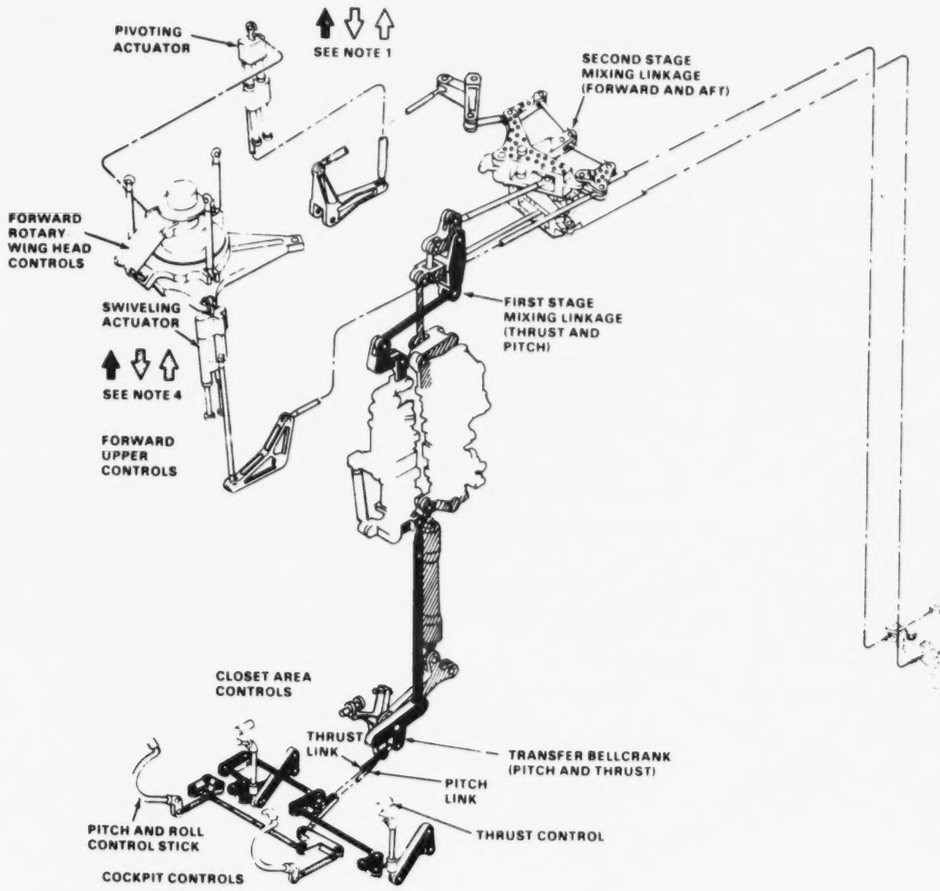
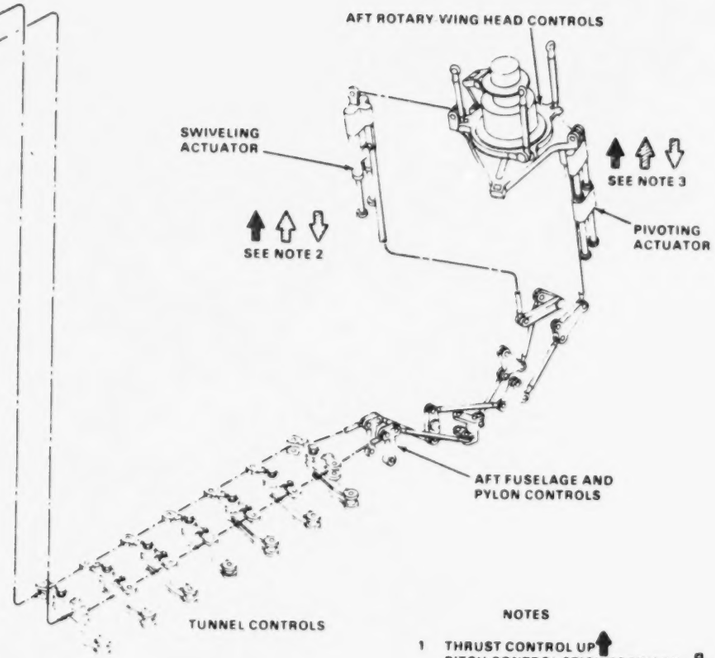
11-1.1 FLIGHT CONTROL SYSTEM SCHEMATIC (Continued)





LEGEND

- FORWARD MIXING
- AFT MIXING
- THRUST SYSTEM
- PITCH SYSTEM

NOTES

1. THRUST CONTROL UP ↑ PITCH CONTROL STICK FORWARD ↓ PITCH CONTROL STICK AFT ↑
2. THRUST CONTROL UP ↑ PITCH CONTROL STICK FORWARD ↑ PITCH CONTROL STICK AFT ↓
3. THRUST CONTROL UP ↑ PITCH CONTROL STICK FORWARD ↓ PITCH CONTROL STICK AFT ↑
4. THRUST CONTROL UP ↑ PITCH CONTROL STICK FORWARD ↓ PITCH CONTROL STICK AFT ↑

THRUST AND PITCH FLIGHT CONTROL

90-54

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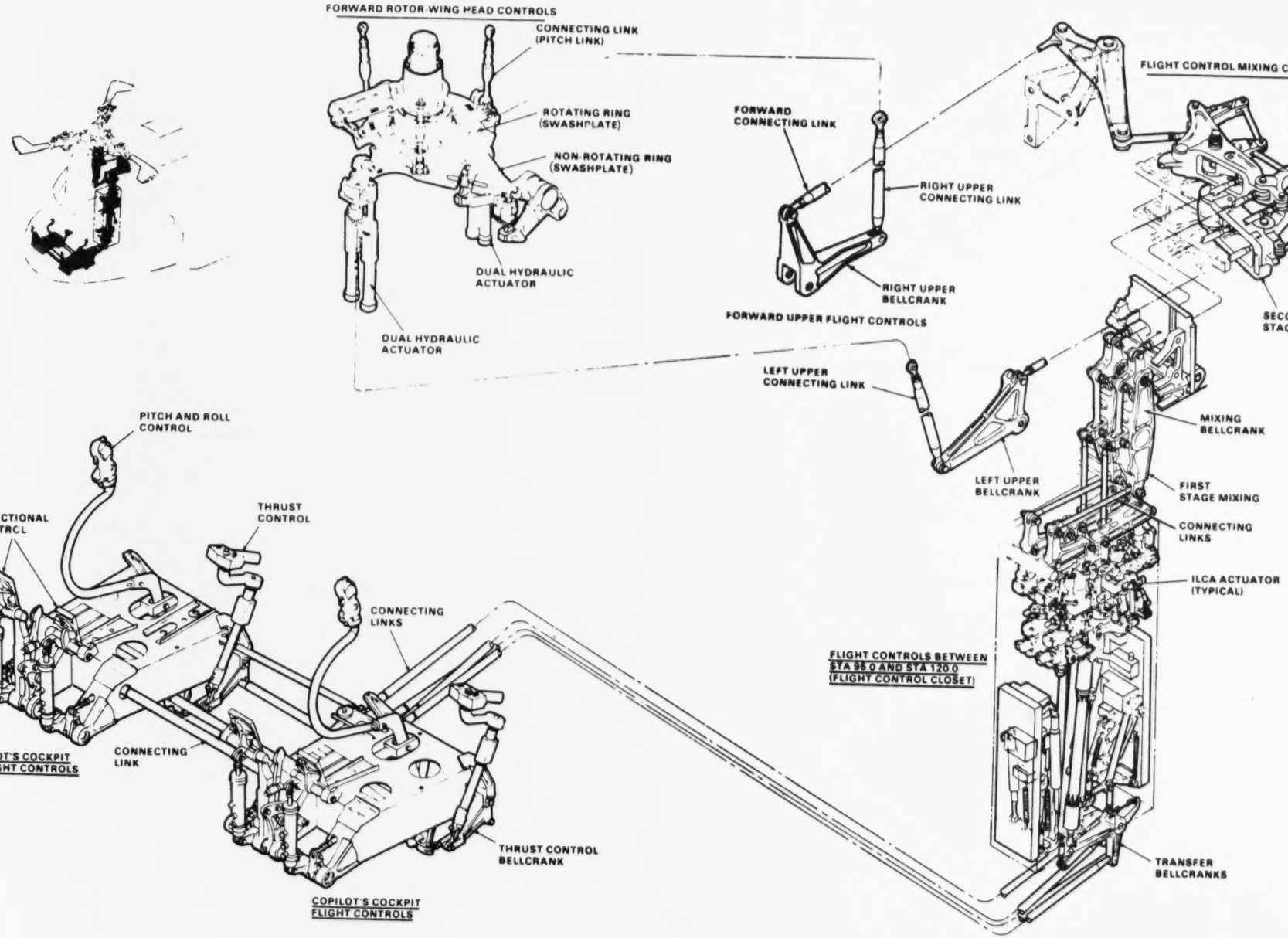
11-1.2 FLIGHT CONTROL SYSTEM CONNECTION DIAGRAM



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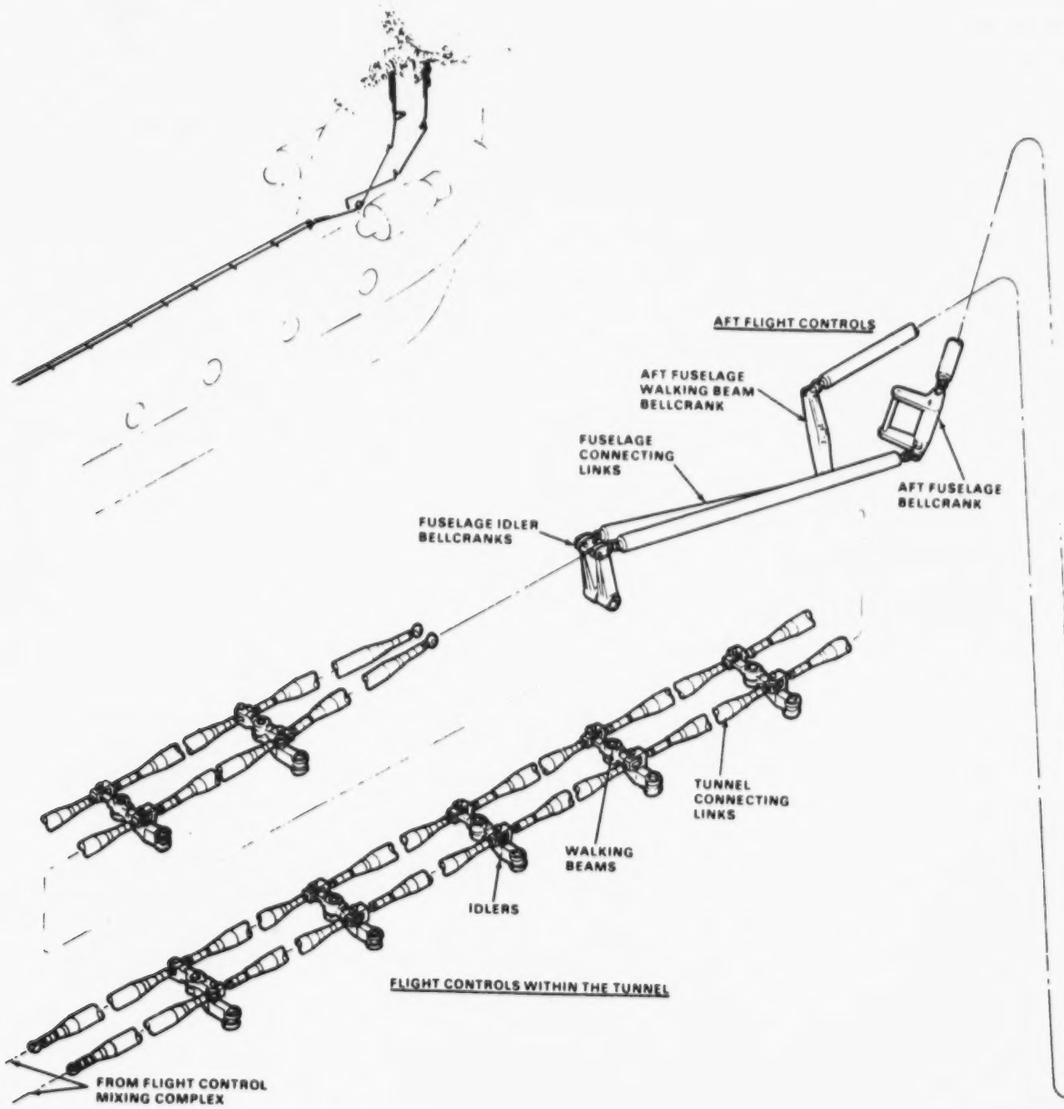
11-1.2 FLIGHT CONTROL SYSTEM CONNECTION DIAGRAM (Continued)



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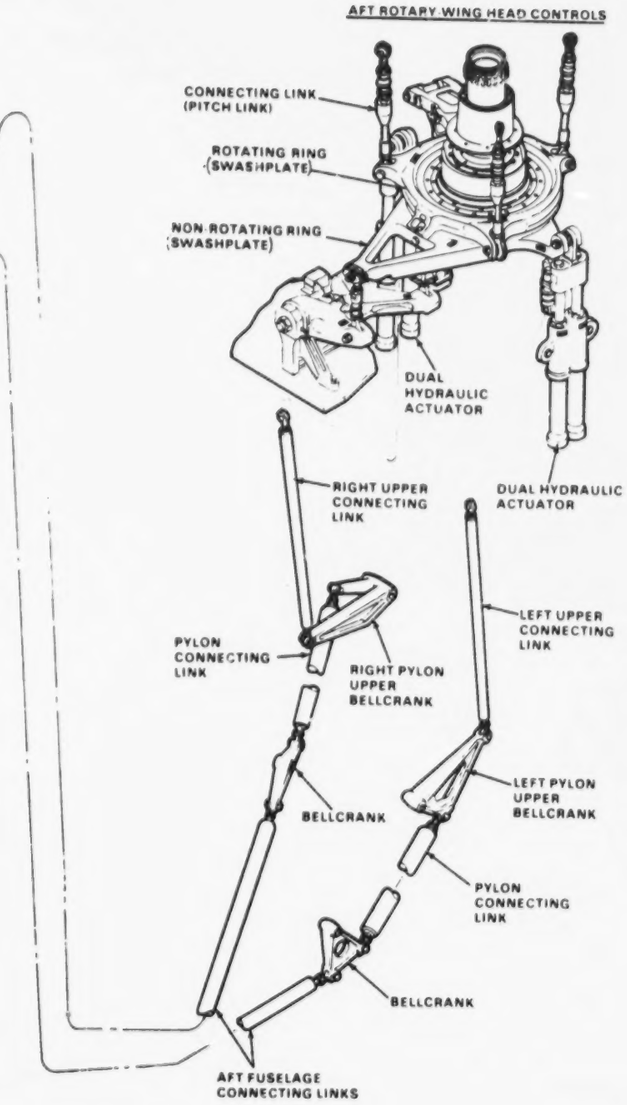


D145-11968-5PA

END OF TASK

11-1.3 FLIGHT CONTROL SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

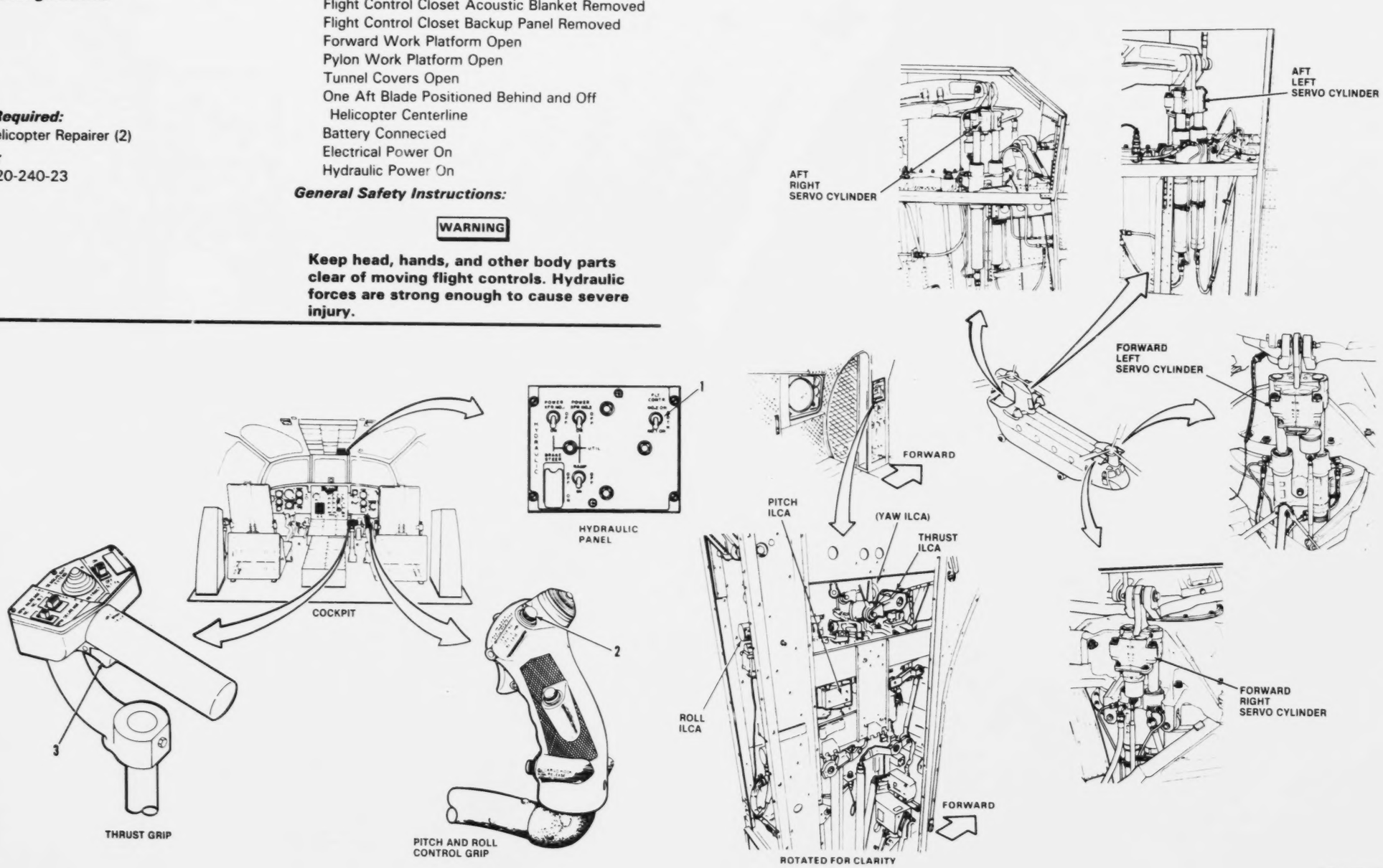
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Flight Control Closet Acoustic Blanket Removed
Flight Control Closet Backup Panel Removed
Forward Work Platform Open
Pylon Work Platform Open
Tunnel Covers Open
One Aft Blade Positioned Behind and Off Helicopter Centerline
Battery Connected
Electrical Power On
Hydraulic Power On

General Safety Instructions:

WARNING

Keep head, hands, and other body parts clear of moving flight controls. Hydraulic forces are strong enough to cause severe injury.



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11-1.3 FLIGHT CONTROL SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
1. **Set FLT CONTR switch (1) to NO. 1 ON.**	
2. **Press pilot's CENTERING DEVICE RELEASE switch (2). Press pilot's CP BRAKE TRIGGER switch (3). Move pilot's pitch and roll control grip in a box pattern. Move pilot's thrust grip up and down. Move pilot's directional pedals forward and aft. Check all flight controls** as cockpit controls are being moved.	Control travel shall be smooth and easy. Hydraulic fluid leakage shall not exceed that defined in TM 55-1520-240-23. If control travel is stiff or binding, check controls for interference or defective bearings. Correct interference or replace defective bearings. If unusual noises are heard, replace component causing noise. If hydraulic fluid is observed, refer to TM 55-1520-240-23 to determine allowable leakage.
3. **Release pilot's CENTERING DEVICE RELEASE switch (2) and CP BRAKE TRIGGER switch (3).**	
4. **Set FLT CONTR switch (1) to NO. 2 ON.**	
5. Repeat step 2 and step 3, then go to step 6.	
6. **Set FLT CONTR switch (1) to BOTH.**	
7. Press pilot's **CENTERING DEVICE RELEASE** switch (2). Press pilot's **CP BRAKE TRIGGER** switch (3). Move thrust control down to detent. Move pitch and roll control and pedals to neutral. Release **CENTERING DEVICE RELEASE** and **CP BRAKE TRIGGER** switches (2 and 3).	

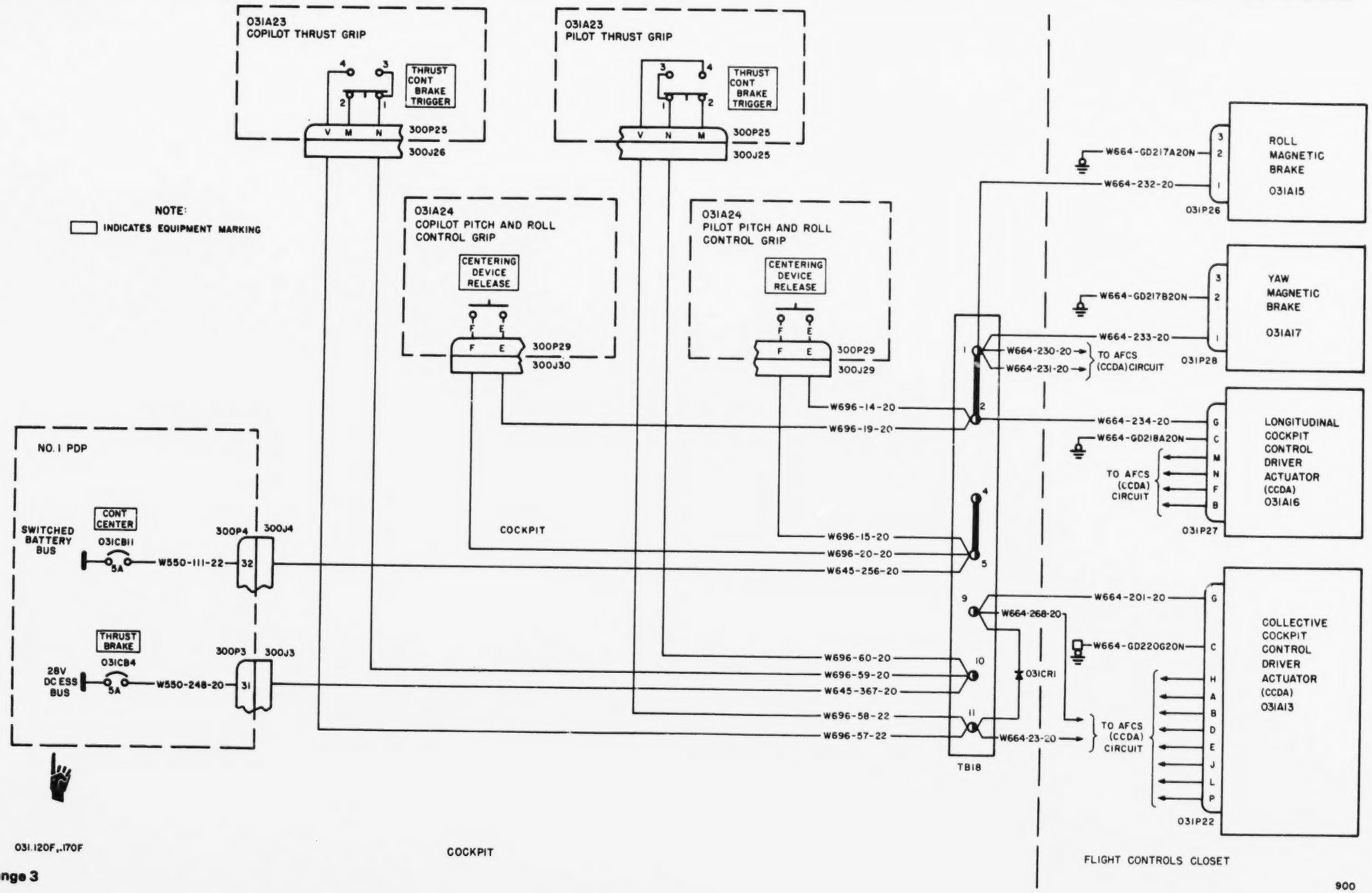
FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Hydraulic Power Off
Electrical Power Off
Battery Disconnected
Flight Control Closet Backup Panel Installed
Flight Control Closet Acoustic Blanket Installed
Tunnel Covers Closed
Pylon Work Platforms Closed
Forward Work Platforms Closed

END OF TASK

11-2 ARTIFICIAL FEEL — MAGNETIC BRAKES

11-2 ARTIFICIAL FEEL — MAGNETIC BRAKES

11-2.1 ARTIFICIAL FEEL — MAGNETIC BRAKES WIRING DIAGRAM



031.120F,.170F

COCKPIT

11-2.2 ARTIFICIAL FEEL — MAGNETIC BRAKES VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

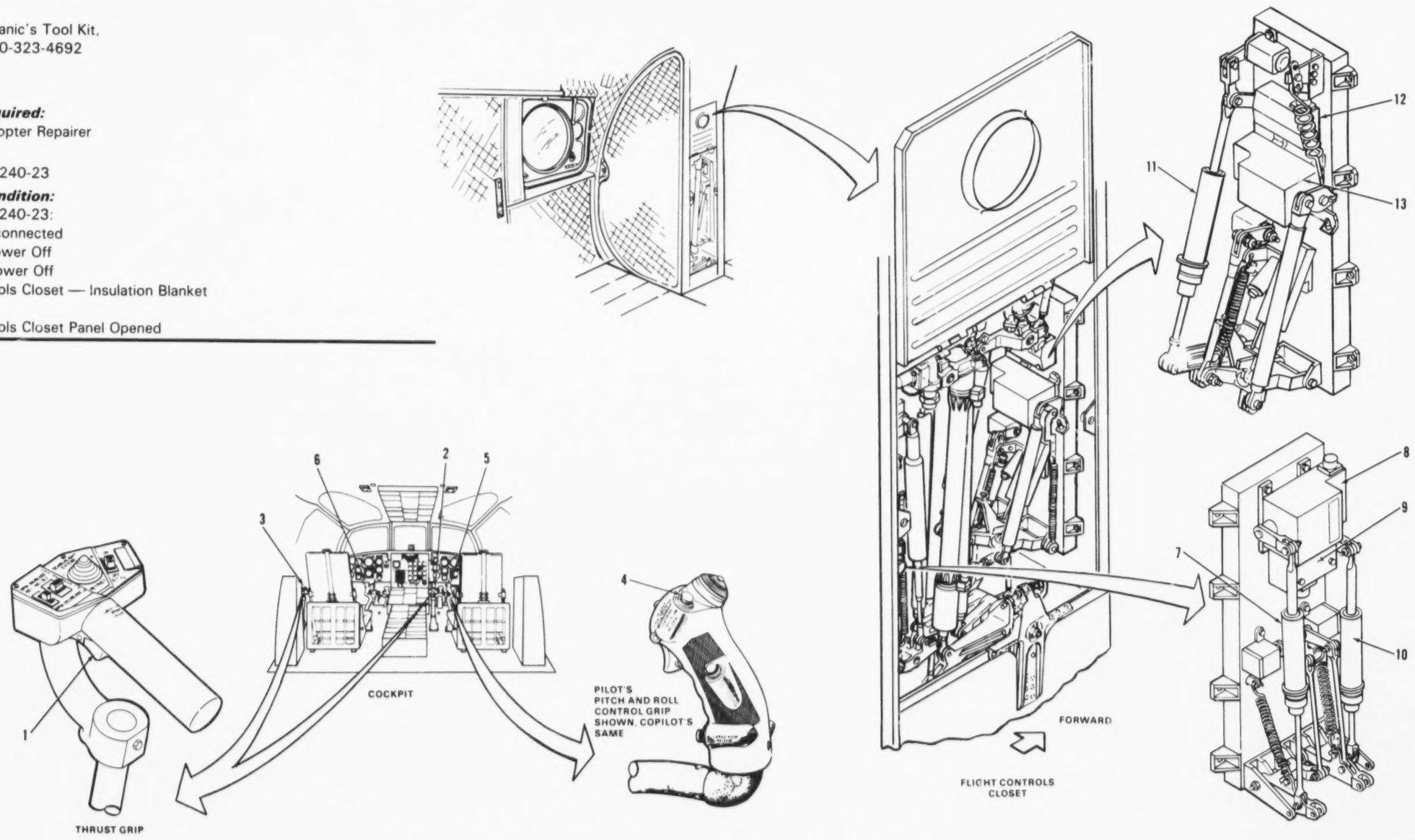
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Flight Controls Closet — Insulation Blanket Removed
Flight Controls Closet Panel Opened



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11-2.2 ARTIFICIAL FEEL — MAGNETIC BRAKES VISUAL CHECK (Continued)

TASK	RESULT
1. **Check THRUST CONT BRAKE TRIGGER switch (1)** on pilot's and copilot's thrust grips (2 and 3).	If either switch (1) is damaged, replace it.
2. **Check CENTERING DEVICE RELEASE switch (4)** on pilot's and copilot's pitch and roll control grips (5 and 6).	If either switch (4) is damaged, replace it.
3. **Check longitudinal centering spring (7).**	If centering spring (7) is bent or has damaged parts, replace it.
4. **Check longitudinal cockpit control driver actuator (ccda) (8).**	If ccda (8) is loose or damaged, tighten or replace it as required. If wiring to ccda is damaged, repair or replace it as required.
5. **Check roll magnetic brake (9).**	If brake (9) is loose or damaged, tighten or replace it as required. If wiring to brake is damaged, repair or replace it as required.
6. **Check roll centering spring (10).**	If centering spring (10) is bent or has damaged parts, replace it.
7. **Check yaw centering spring (11).**	If centering spring (11) is bent or has damaged parts, replace it.
8. **Check yaw magnetic brake (12).**	If brake (12) is loose or damaged, tighten or replace it as required. If wiring to brake is damaged, repair or replace it as required.
9. **Check collective ccda (13).**	If ccda (13) is loose or damaged, tighten or replace it as required. If wiring to ccda is damaged, repair or replace it as required.

FOLLOW-ON MAINTENANCE:
None

END OF TASK

11-2.3 ARTIFICIAL FEEL — MAGNETIC BRAKES OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

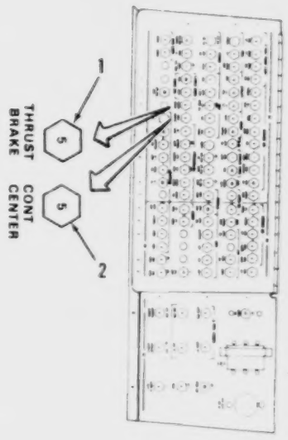
Materials:
None

Personnel Required:
Medium Helicopter Repairer

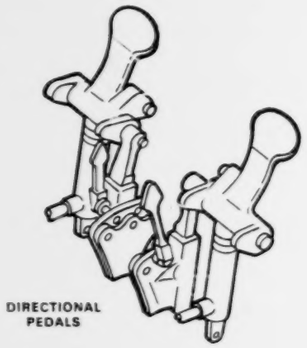
References:
TM 55-1520-240-23

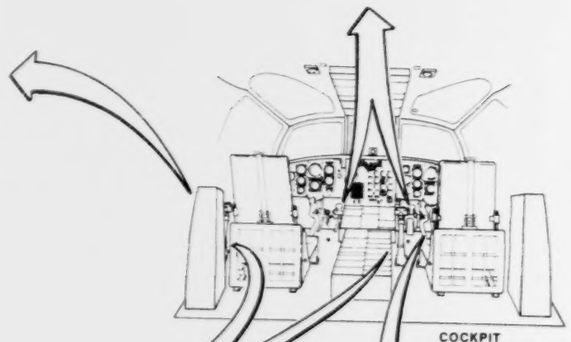
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
Artificial Feel — Magnetic Brakes Visual Check Performed

TASK	RESULT
CHECK CIRCUIT BREAKERS	
1. **Check** that **THRUST BRAKE circuit breaker (1)** is closed.	If circuit breaker (1) is open, close it. If it opens again, go to task 11-2.4.
2. **Check** that **CONT CENTER circuit breaker (2)** is closed.	If circuit breaker (2) is open, close it. If it opens again, go to task 11-2.5.
CHECK ARTIFICIAL FEEL AND PILOT CONTROL OF MAGNETIC BRAKES	
3. **Press and hold pilot's CENTERING DEVICE RELEASE switch (3). Center pilot's pitch and roll control stick and directional pedals. Release CENTERING DEVICE RELEASE switch.**	Control stick and directional pedals shall center easily and remain there after CENTERING DEVICE RELEASE switch (3) is released. If both control stick and directional pedals do NOT remain centered, go to task 11-2.6. If either control stick or directional pedals do not remain centered, continue operational check to identify problem.
4. **Press and hold pilot's CENTERING DEVICE RELEASE switch (3). Move pilot's control stick through longitudinal travel range. Position control 1 inch forward of center position. Release switch.**	Control stick shall move easily through longitudinal travel range and remain at selected position when switch (3) is released. If it does not, go to task 11-2.7.
5. **Move pilot's control stick 1 inch forward and release control stick. Move pilot's control stick 1 inch aft and release control stick.**	Control stick shall return to original position when control stick is released. If it does not, go to task 11-2.7.



NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT


DIRECTIONAL PEDALS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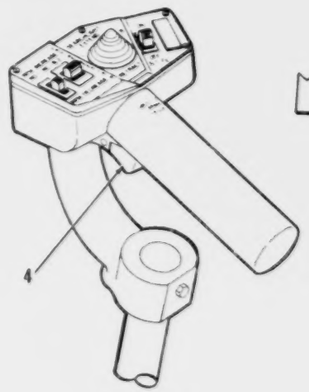
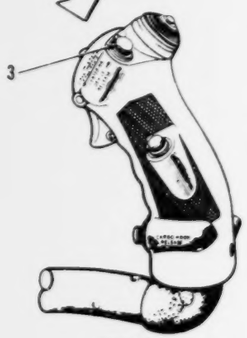


THRUST GRIP



PILOT'S PITCH AND ROLL CONTROL GRIP SHOWN, COPILOT'S SAME

45x54

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GO TO NEXT PAGE

11-2.3 ARTIFICIAL FEEL — MAGNETIC BRAKES OPERATIONAL CHECK (Continued)

TASK	RESULT
6. **Press and hold pilot's CENTERING DEVICE RELEASE switch (3). Move pilot's control stick through lateral travel range. Position control stick 1 inch left of center position. Release switch.**	Control stick shall move easily through lateral travel range and remain at selected position when switch (3) is released. If it does not, go to task 11-2.7.
7. Move pilot's control stick 1 inch left and release control stick. Move pilot's control stick 1 inch right and release control stick.	Control stick shall return to original position when control stick is released. If it does not, go to task 11-2.7.
8. **Press and hold pilot's CENTERING DEVICE RELEASE switch (3). Move pilot's pedals through directional range. Position left pedal 1 inch forward of center. Release switch.**	Pedals shall move easily through directional range and remain at selected position when switch (3) is released. If they do not, go to task 11-2.8.
9. **Move pilot's left pedal 1 inch forward and release it. Move pilot's right pedal 1 inch forward and release it.**	Pedals shall return to original position when pedals are released. If they do not, go to task 11-2.8.
10. **Press and hold pilot's THRUST CONT BRAKE TRIGGER switch (4). Move pilot's thrust control full up. Release switch.**	Thrust control shall move easily to full up and remain there after switch (4) is released. If not, go to task 11-2.9.
11. **Press and hold pilot's THRUST CONT BRAKE TRIGGER switch (4). Move pilot's thrust control full down. Release switch.**	Thrust control shall move easily and remain down after switch (4) is released. If not, go to task 11-2.9. **NOTE** Thrust control down stop is spring loaded. Control will raise up from full down to a predetermined position when released.
CHECK COPILOT CONTROL OF MAGNETIC BRAKES	
12. **Press and hold copilot's THRUST CONT BRAKE TRIGGER switch (4). Move copilot's thrust control from full down to full up and back to mid position. Release switch.**	Thrust control shall move easily and remain at selected position after switch (4) is released. If not, go to task 11-2.10.
13. **Press and hold copilot's CENTERING DEVICE RELEASE switch (3). Move copilot's pitch and roll control stick forward. Release switch.**	Control stick shall remain at selected position after switch (3) is released. If it does not, go to task 11-2.11.
14. Move control stick to center position. **Press and release CENTERING DEVICE RELEASE switch.**	Control stick shall remain at center position.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery disconnected.
Electrical power off.
Hydraulic power off.
Flight controls closet panel closed.
Flight controls insulated blanket installed.

END OF TASK

11-2.4 THRUST BRAKE CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

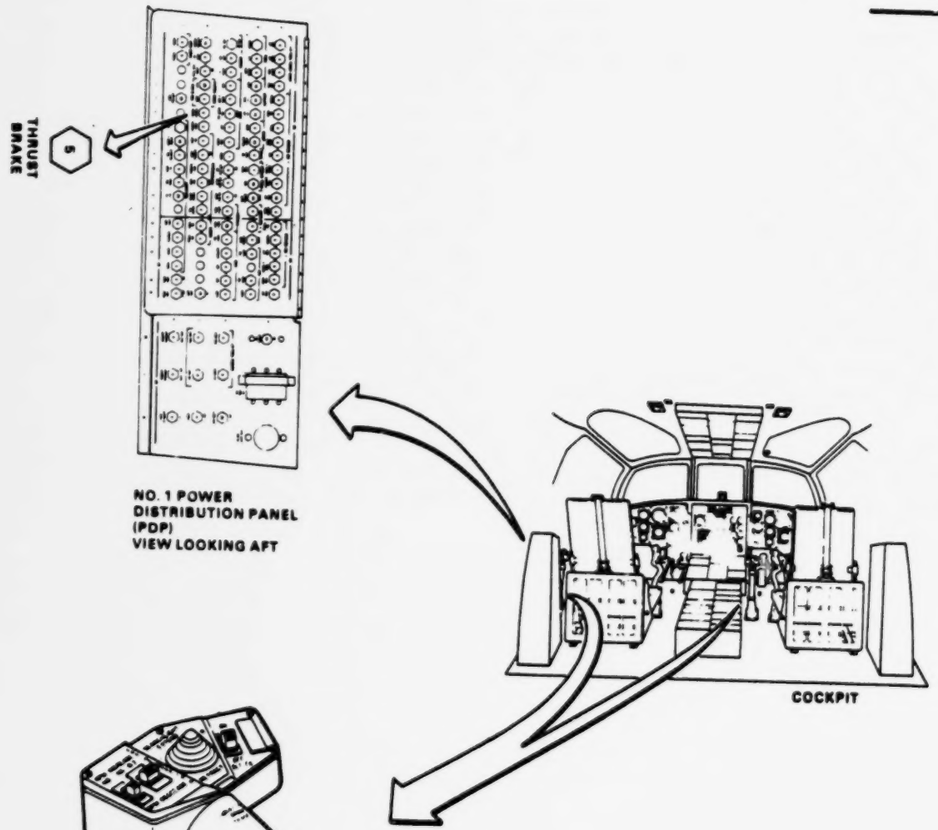
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

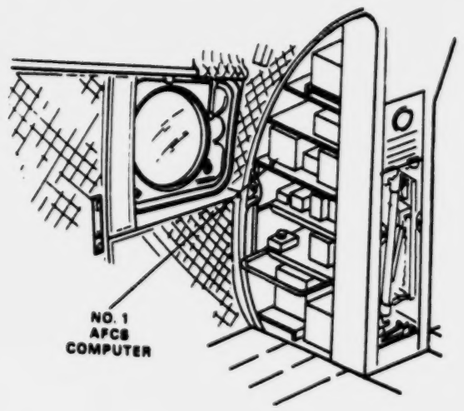
Materials:
None

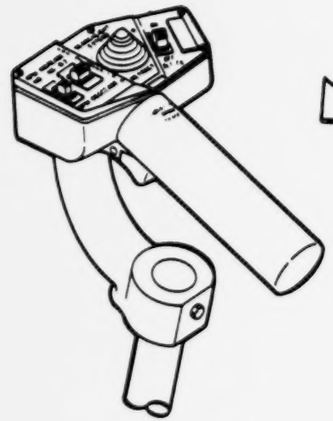
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Electronic Compartment Acoustic
Blanket Removed







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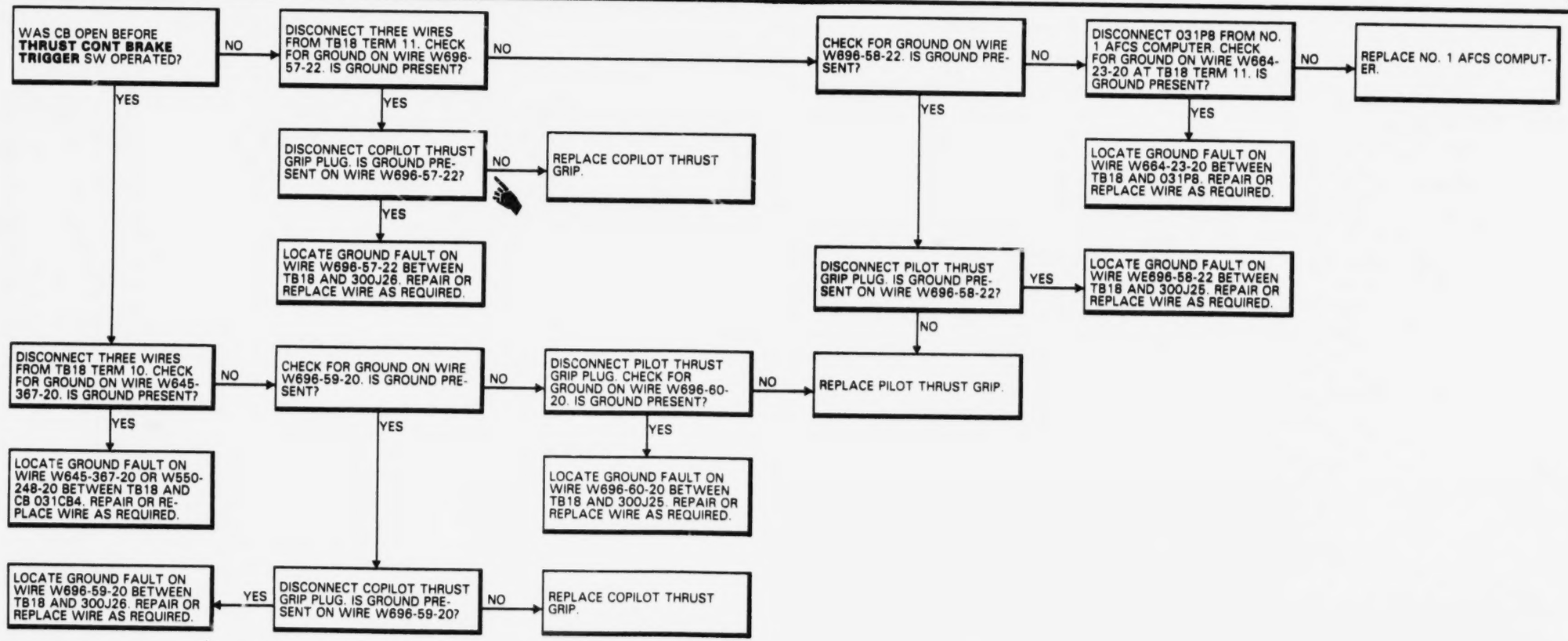
11-2.4 THRUST BRAKE CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CB OPEN BEFORE THRUST CONT BRAKE TRIGGER SW OPERATED?
NO
YES
DISCONNECT THREE WIRES FROM TB18 TERM 11. CHECK FOR GROUND ON WIRE W696-57-22. IS GROUND PRESENT?
NO
YES
DISCONNECT COPILOT THRUST GRIP PLUG. IS GROUND PRESENT ON WIRE W696-57-22?
NO
REPLACE COPILOT THRUST GRIP.
YES
LOCATE GROUND FAULT ON WIRE W696-57-22 BETWEEN TB18 AND 300J26. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON WIRE W696-58-22. IS GROUND PRESENT?
NO
YES
DISCONNECT 031P8 FROM NO. 1 AFCS COMPUTER. CHECK FOR GROUND ON WIRE W664-23-20 AT TB18 TERM 11. IS GROUND PRESENT?
NO
REPLACE NO. 1 AFCS COMPUTER.
YES
LOCATE GROUND FAULT ON WIRE W664-23-20 BETWEEN TB18 AND 031P8. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PILOT THRUST GRIP PLUG. IS GROUND PRESENT ON WIRE W696-58-22?
YES
LOCATE GROUND FAULT ON WIRE WE696-58-22 BETWEEN TB18 AND 300J25. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE PILOT THRUST GRIP.
DISCONNECT THREE WIRES FROM TB18 TERM 10. CHECK FOR GROUND ON WIRE W645-367-20. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W645-367-20 OR W550-248-20 BETWEEN TB18 AND CB 031CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON WIRE W696-59-20. IS GROUND PRESENT?
NO
YES
DISCONNECT PILOT THRUST GRIP PLUG. CHECK FOR GROUND ON WIRE W696-60-20. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W696-60-20 BETWEEN TB18 AND 300J25. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W696-59-20 BETWEEN TB18 AND 300J26. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT COPILOT THRUST GRIP PLUG. IS GROUND PRESENT ON WIRE W696-59-20?
NO
REPLACE COPILOT THRUST GRIP.

END OF TASK

11-2.5 CONT CENTER CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

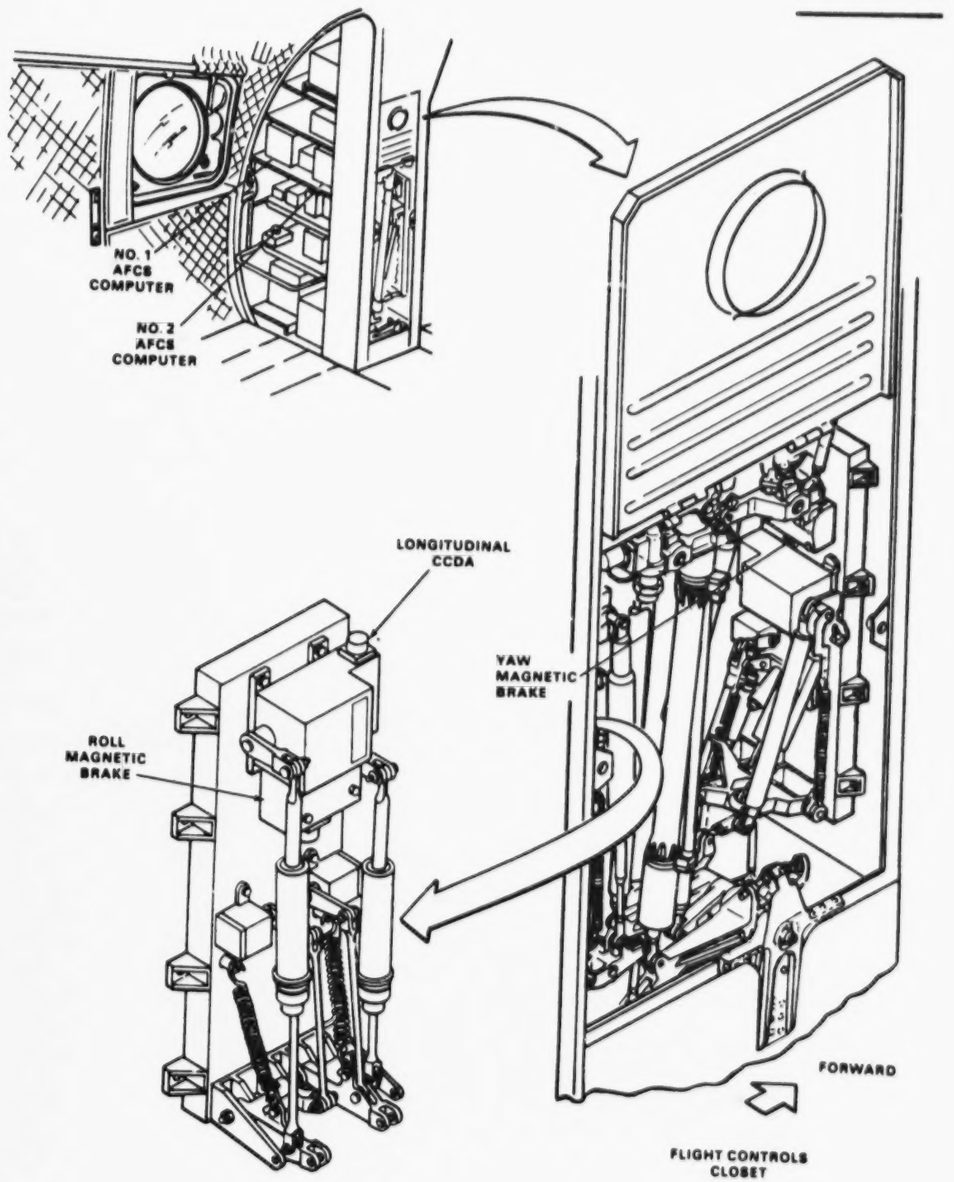
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

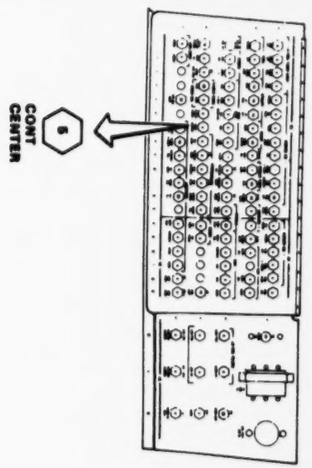
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

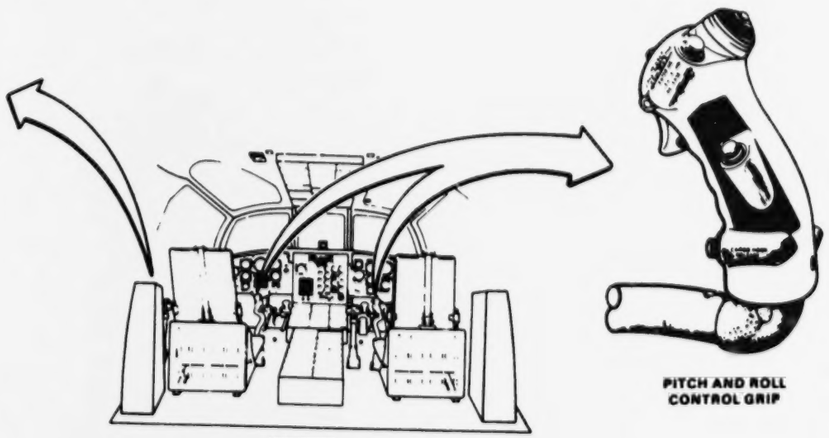
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Electronic Compartment Acoustic Blanket Removed





NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



COCKPIT

PITCH AND ROLL CONTROL GRIP

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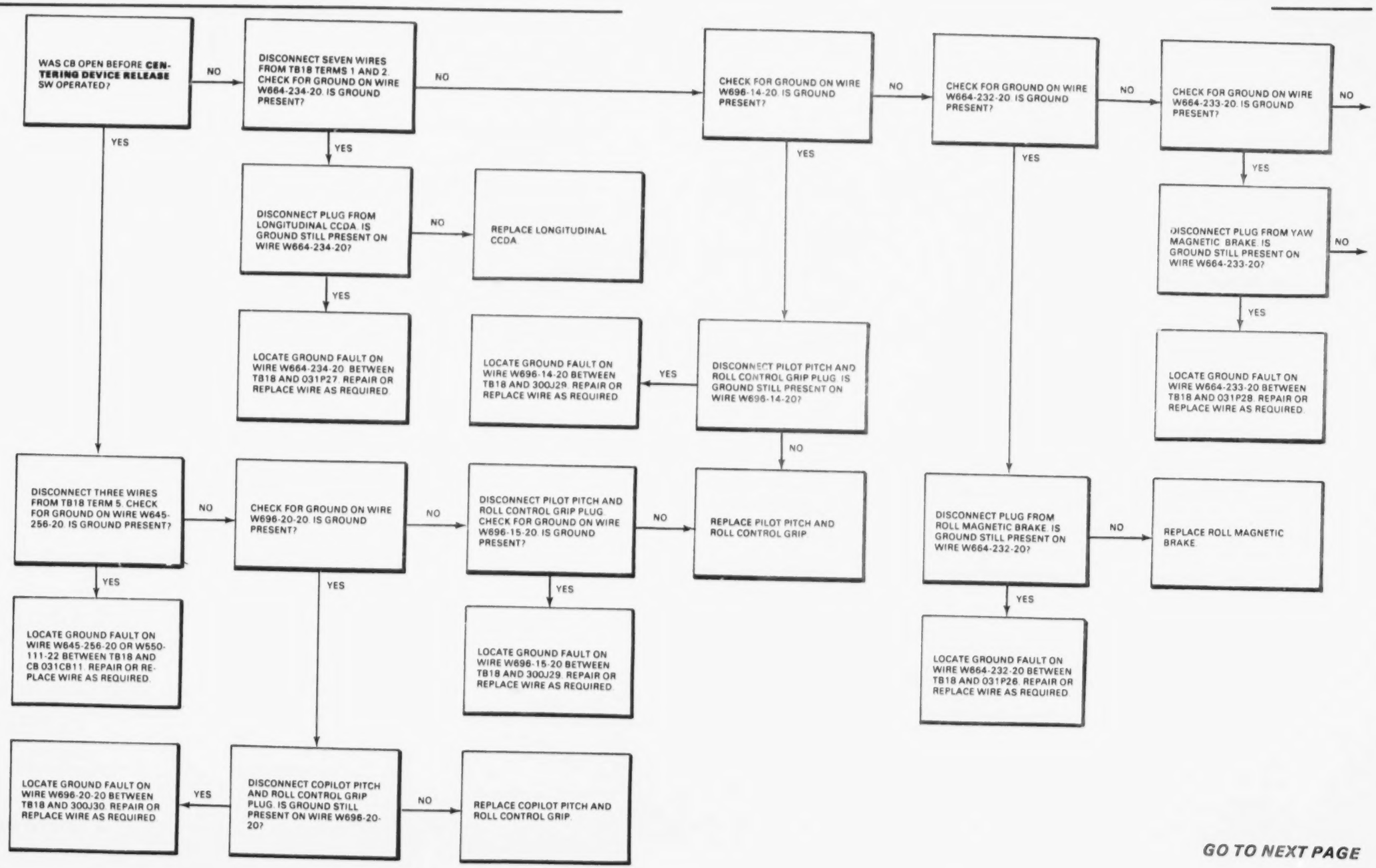
11-2.5 CONT CENTER CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CB OPEN BEFORE CENTERING DEVICE RELEASE SW OPERATED?
NO
YES
DISCONNECT SEVEN WIRES FROM TB18 TERMS 1 AND 2. CHECK FOR GROUND ON WIRE W664-234-20. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG FROM LONGITUDINAL CCDA. IS GROUND STILL PRESENT ON WIRE W664-234-20?
NO
REPLACE LONGITUDINAL CCDA
YES
LOCATE GROUND FAULT ON WIRE W664-234-20 BETWEEN TB18 AND 031P27. REPAIR OR REPLACE WIRE AS REQUIRED
CHECK FOR GROUND ON WIRE W696-14-20. IS GROUND PRESENT?
NO
YES
DISCONNECT PILOT PITCH AND ROLL CONTROL GRIP PLUG. IS GROUND STILL PRESENT ON WIRE W696-14-20?
YES
LOCATE GROUND FAULT ON WIRE W696-14-20 BETWEEN TB18 AND 300J29. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE PILOT PITCH AND ROLL CONTROL GRIP
DISCONNECT PILOT PITCH AND ROLL CONTROL GRIP PLUG. CHECK FOR GROUND ON WIRE W696-15-20. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W696-15-20 BETWEEN TB18 AND 300J29. REPAIR OR REPLACE WIRE AS REQUIRED
DISCONNECT THREE WIRES FROM TB18 TERM 5. CHECK FOR GROUND ON WIRE W645-256-20. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W645-256-20 OR W550-111-22 BETWEEN TB18 AND CB 031CB11. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON WIRE W696-20-20. IS GROUND PRESENT?
NO
YES
DISCONNECT COPILOT PITCH AND ROLL CONTROL GRIP PLUG. IS GROUND STILL PRESENT ON WIRE W696-20-20?
YES
LOCATE GROUND FAULT ON WIRE W696-20-20 BETWEEN TB18 AND 300J30. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE COPILOT PITCH AND ROLL CONTROL GRIP.
CHECK FOR GROUND ON WIRE W664-232-20. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG FROM ROLL MAGNETIC BRAKE. IS GROUND STILL PRESENT ON WIRE W664-232-20?
NO
REPLACE ROLL MAGNETIC BRAKE.
YES
LOCATE GROUND FAULT ON WIRE W664-232-20 BETWEEN TB18 AND 031P26. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON WIRE W664-233-20. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG FROM YAW MAGNETIC BRAKE. IS GROUND STILL PRESENT ON WIRE W664-233-20?
NO
YES
LOCATE GROUND FAULT ON WIRE W664-233-20 BETWEEN TB18 AND 031P28. REPAIR OR REPLACE WIRE AS REQUIRED.

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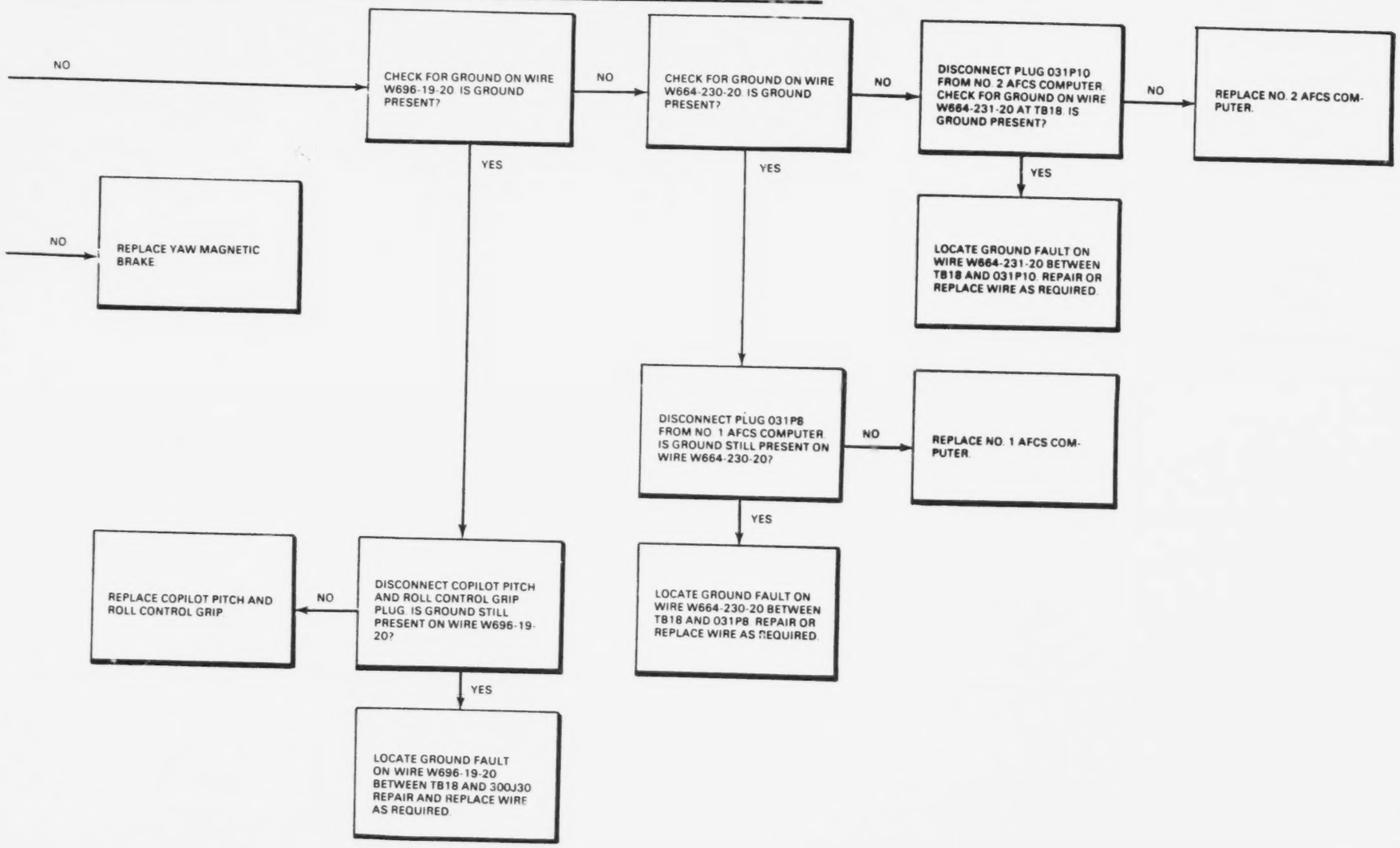
11-2.5 CONT CENTER CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


NO
CHECK FOR GROUND ON WIRE W696-19-20. IS GROUND PRESENT?
NO
CHECK FOR GROUND ON WIRE W664-230-20. IS GROUND PRESENT?
NO
DISCONNECT PLUG 031P10 FROM NO. 2 AFCS COMPUTER. CHECK FOR GROUND ON WIRE W664-231-20 AT TB18. IS GROUND PRESENT?
NO
REPLACE NO. 2 AFCS COMPUTER.
YES
LOCATE GROUND FAULT ON WIRE W664-231-20 BETWEEN TB18 AND 031P10. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE YAW MAGNETIC BRAKE.
YES
YES
DISCONNECT PLUG 031P8 FROM NO. 1 AFCS COMPUTER. IS GROUND STILL PRESENT ON WIRE W664-230-20?
NO
REPLACE NO. 1 AFCS COMPUTER.
YES
LOCATE GROUND FAULT ON WIRE W664-230-20 BETWEEN TB18 AND 031P8. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE COPILOT PITCH AND ROLL CONTROL GRIP.
NO
DISCONNECT COPILOT PITCH AND ROLL CONTROL GRIP PLUG. IS GROUND STILL PRESENT ON WIRE W696-19-20?
YES
LOCATE GROUND FAULT ON WIRE W696-19-20 BETWEEN TB18 AND 300J30. REPAIR AND REPLACE WIRE AS REQUIRED.

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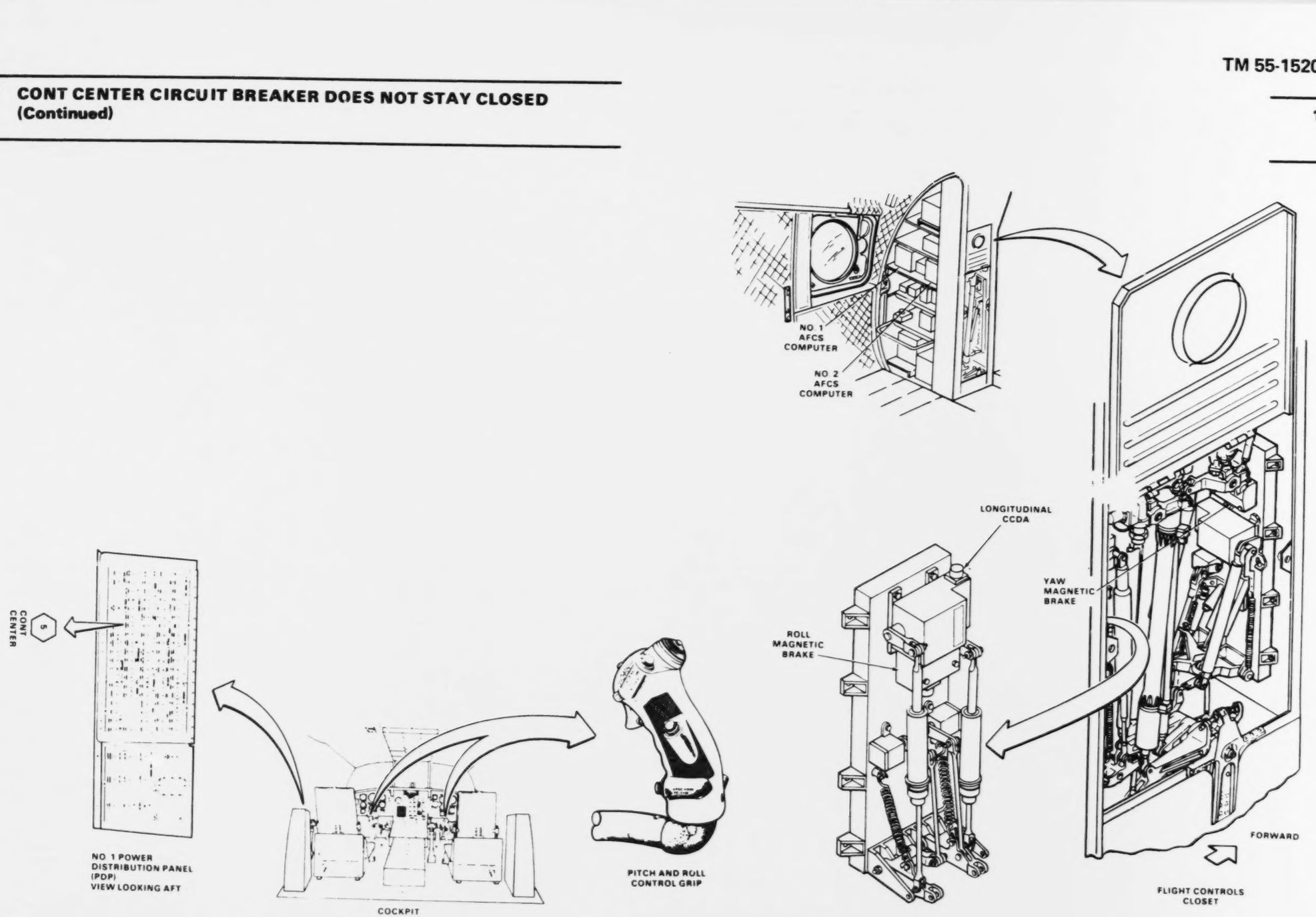
11-2.5 CONT CENTER CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)



END OF TASK

11-2.6 CONTROL STICK AND PEDALS WILL NOT STAY CENTERED AFTER PILOT'S CENTERING DEVICE RELEASE SWITCH RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

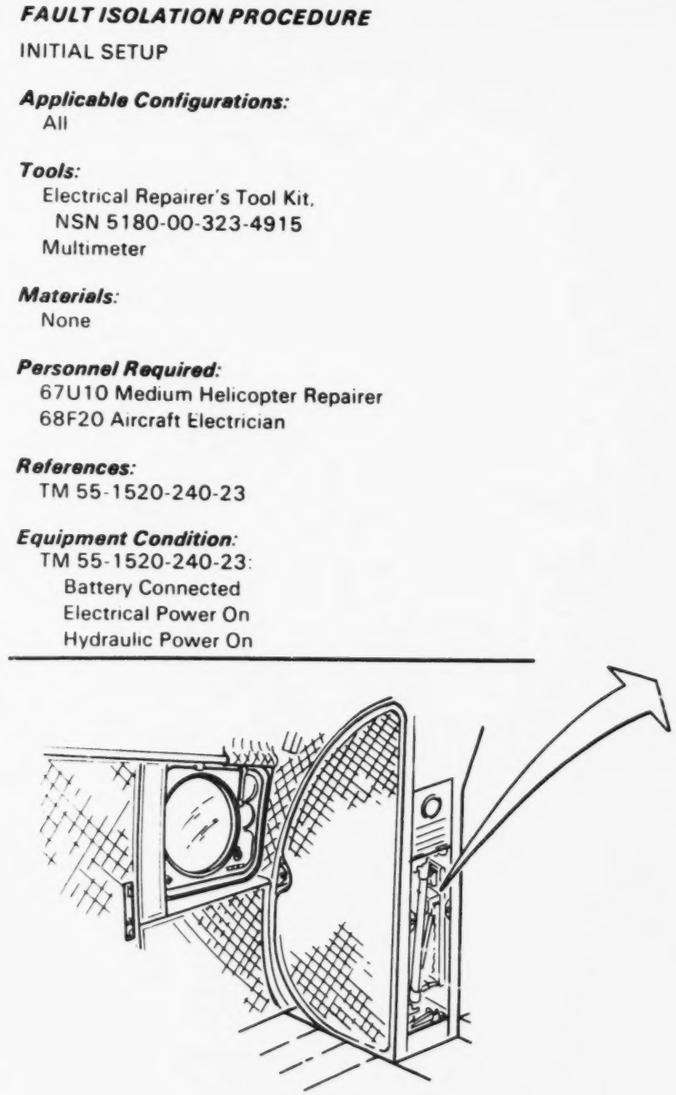
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

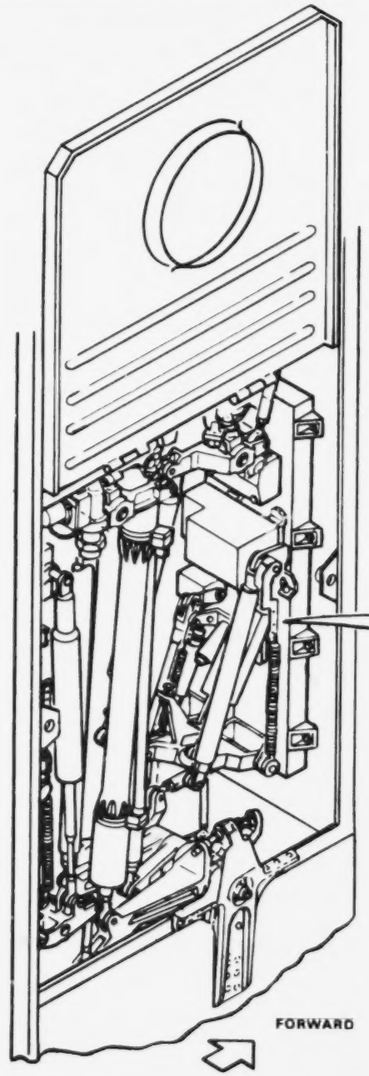
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

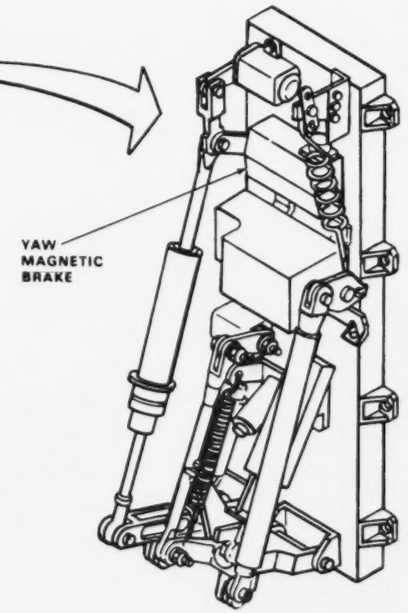
References:
TM 55-1520-240-23

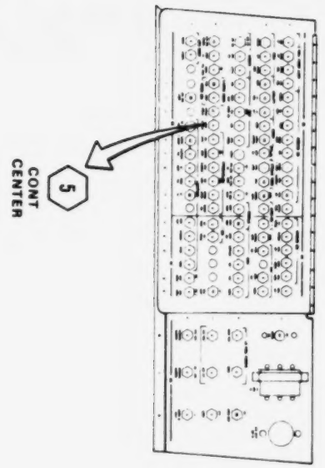
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On



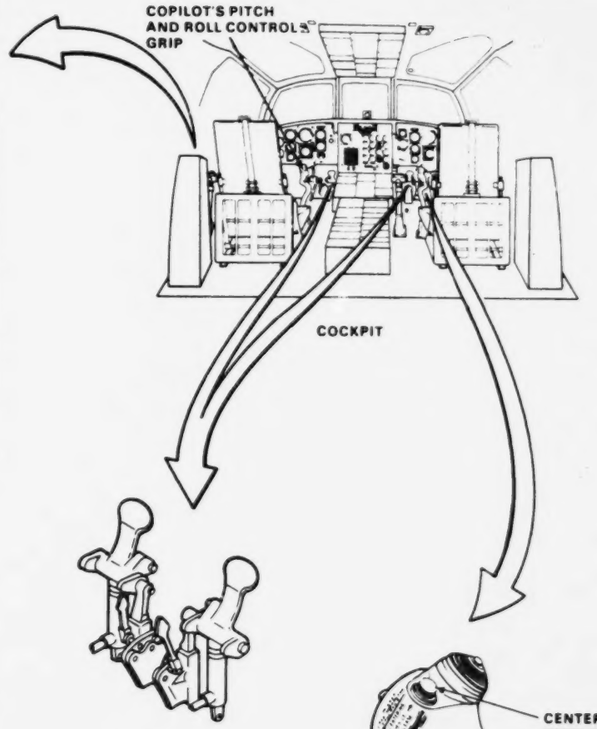


FLIGHT CONTROLS CLOSET

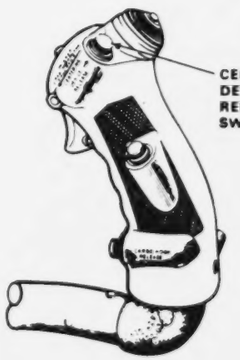




NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



DIRECTIONAL PEDALS



PILOT'S PITCH AND ROLL CONTROL GRIP SHOWN, COPILOT'S SAME

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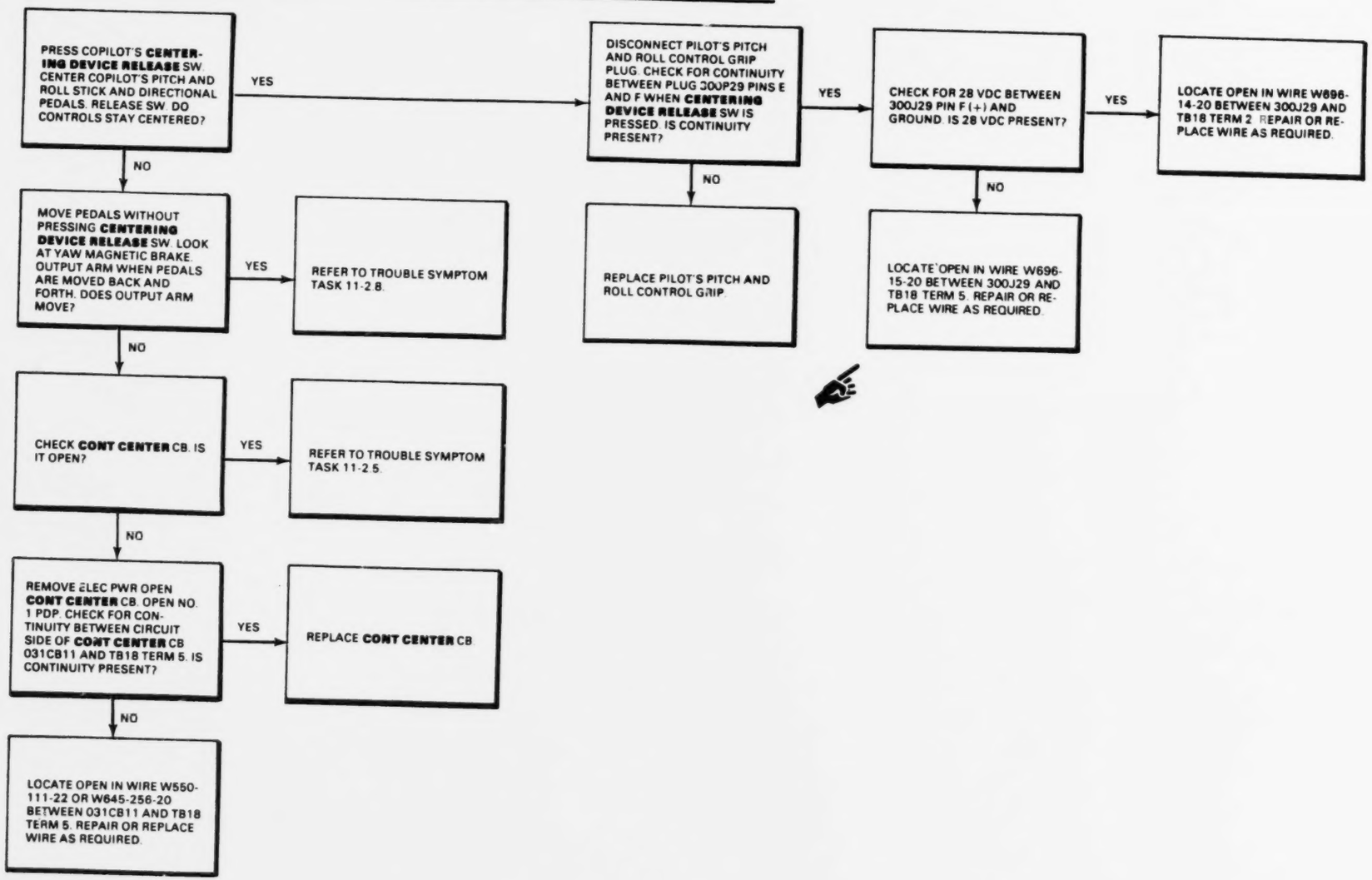
11-2.6 STICK AND PEDALS WILL NOT STAY CENTERED AFTER PILOT'S CENTERING DEVICE RELEASE SWITCH RELEASED (Continued)


PRESS COPILOT'S CENTERING DEVICE RELEASE SW. CENTER COPILOT'S PITCH AND ROLL STICK AND DIRECTIONAL PEDALS. RELEASE SW. DO CONTROLS STAY CENTERED?
YES
NO
MOVE PEDALS WITHOUT PRESSING CENTERING DEVICE RELEASE SW. LOOK AT YAW MAGNETIC BRAKE OUTPUT ARM WHEN PEDALS ARE MOVED BACK AND FORTH. DOES OUTPUT ARM MOVE?
YES
REFER TO TROUBLE SYMPTOM TASK 11-2.8.
NO
CHECK CONT CENTER CB. IS IT OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 11-2.5.
NO
REMOVE ELEC PWR OPEN CONT CENTER CB. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF CONT CENTER CB 031CB11 AND TB18 TERM 5. IS CONTINUITY PRESENT?
YES
REPLACE CONT CENTER CB
NO
LOCATE OPEN IN WIRE W550-111-22 OR W645-256-20 BETWEEN 031CB11 AND TB18 TERM 5. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PILOT'S PITCH AND ROLL CONTROL GRIP PLUG. CHECK FOR CONTINUITY BETWEEN PLUG 300P29 PINS E AND F WHEN CENTERING DEVICE RELEASE SW IS PRESSED. IS CONTINUITY PRESENT?
YES
NO
REPLACE PILOT'S PITCH AND ROLL CONTROL GRIP.
CHECK FOR 28 VDC BETWEEN 300J29 PIN F (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W696-15-20 BETWEEN 300J29 AND TB18 TERM 5. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W696-14-20 BETWEEN 300J29 AND TB18 TERM 2. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-2.7 CONTROL STICK DOES NOT REMAIN AT SELECTED POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Application Configurations:
All

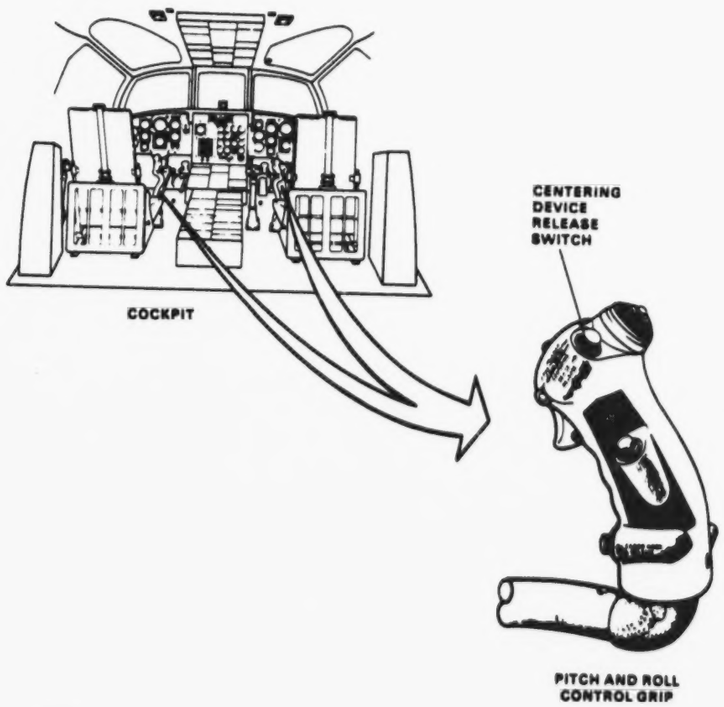
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On



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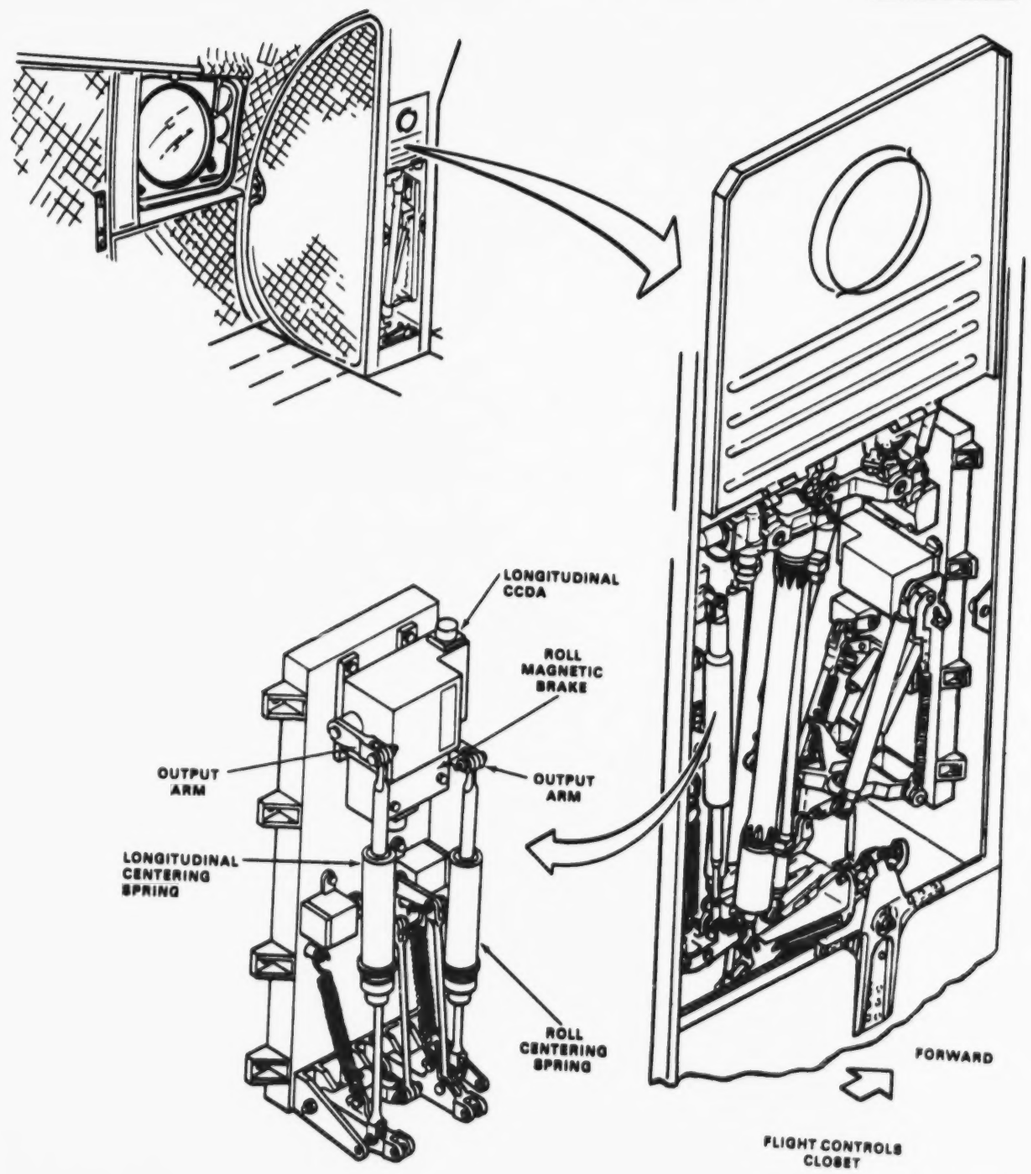

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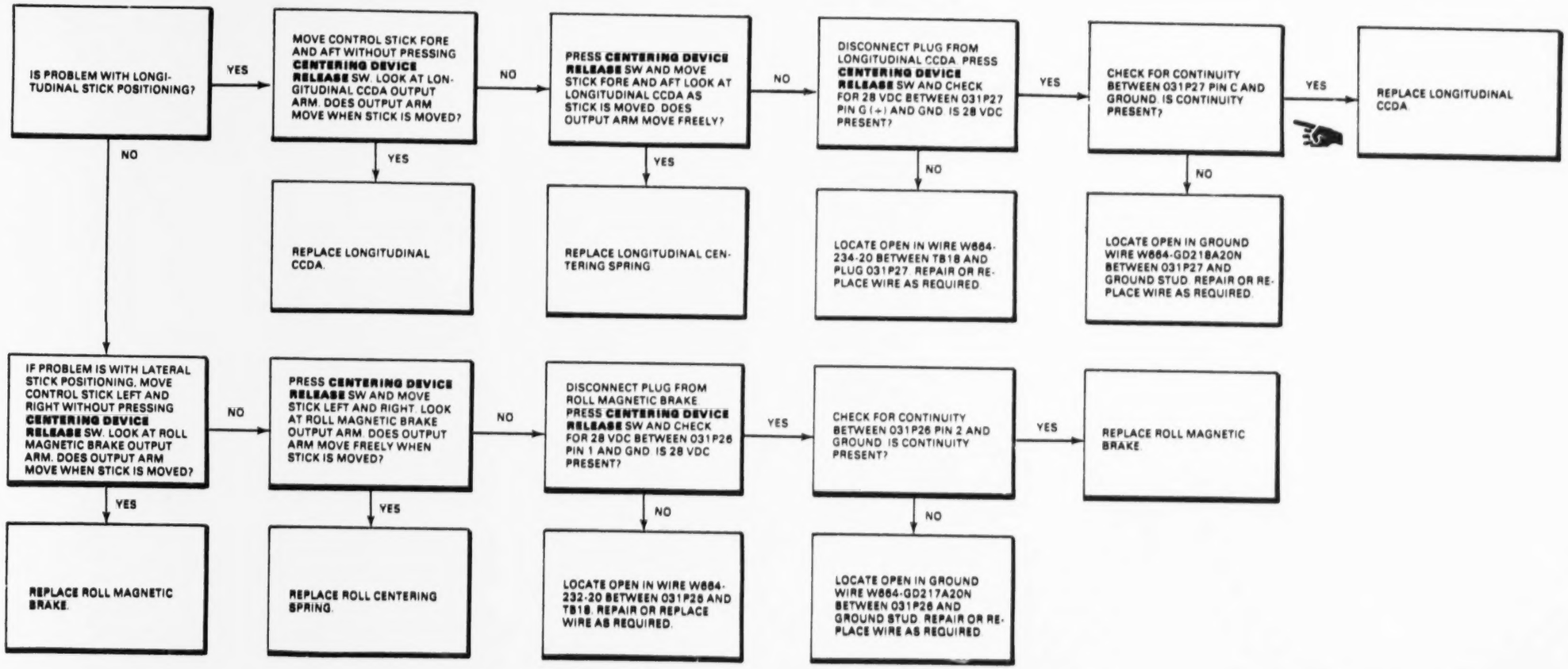
11-2.7 CONTROL STICK DOES NOT REMAIN AT SELECTED POSITION (Continued)


IS PROBLEM WITH LONGITUDINAL STICK POSITIONING?
YES
MOVE CONTROL STICK FORE AND AFT WITHOUT PRESSING **CENTERING DEVICE RELEASE** SW. LOOK AT LONGITUDINAL CCDA OUTPUT ARM. DOES OUTPUT ARM MOVE WHEN STICK IS MOVED?
NO
PRESS **CENTERING DEVICE RELEASE** SW AND MOVE STICK FORE AND AFT LOOK AT LONGITUDINAL CCDA AS STICK IS MOVED. DOES OUTPUT ARM MOVE FREELY?
NO
DISCONNECT PLUG FROM LONGITUDINAL CCDA. PRESS **CENTERING DEVICE RELEASE** SW AND CHECK FOR 28 VDC BETWEEN 031P27 PIN G (+) AND GND. IS 28 VDC PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN 031P27 PIN C AND GROUND. IS CONTINUITY PRESENT?
YES
REPLACE LONGITUDINAL CCDA.
NO
LOCATE OPEN IN GROUND WIRE W664-GD218A20N BETWEEN 031P27 AND GROUND STUD. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-234-20 BETWEEN TB18 AND PLUG 031P27. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE LONGITUDINAL CENTERING SPRING.
YES
REPLACE LONGITUDINAL CCDA.
NO
IF PROBLEM IS WITH LATERAL STICK POSITIONING, MOVE CONTROL STICK LEFT AND RIGHT WITHOUT PRESSING **CENTERING DEVICE RELEASE** SW. LOOK AT ROLL MAGNETIC BRAKE OUTPUT ARM. DOES OUTPUT ARM MOVE WHEN STICK IS MOVED?
NO
PRESS **CENTERING DEVICE RELEASE** SW AND MOVE STICK LEFT AND RIGHT. LOOK AT ROLL MAGNETIC BRAKE OUTPUT ARM. DOES OUTPUT ARM MOVE FREELY WHEN STICK IS MOVED?
NO
DISCONNECT PLUG FROM ROLL MAGNETIC BRAKE. PRESS **CENTERING DEVICE RELEASE** SW AND CHECK FOR 28 VDC BETWEEN 031P26 PIN 1 AND GND. IS 28 VDC PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN 031P26 PIN 2 AND GROUND. IS CONTINUITY PRESENT?
YES
REPLACE ROLL MAGNETIC BRAKE.
NO
LOCATE OPEN IN GROUND WIRE W664-GD217A20N BETWEEN 031P26 AND GROUND STUD. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-232-20 BETWEEN 031P26 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE ROLL CENTERING SPRING.
YES
REPLACE ROLL MAGNETIC BRAKE.

END OF TASK

11-2.8 PEDALS DO NOT REMAIN AT SELECTED POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

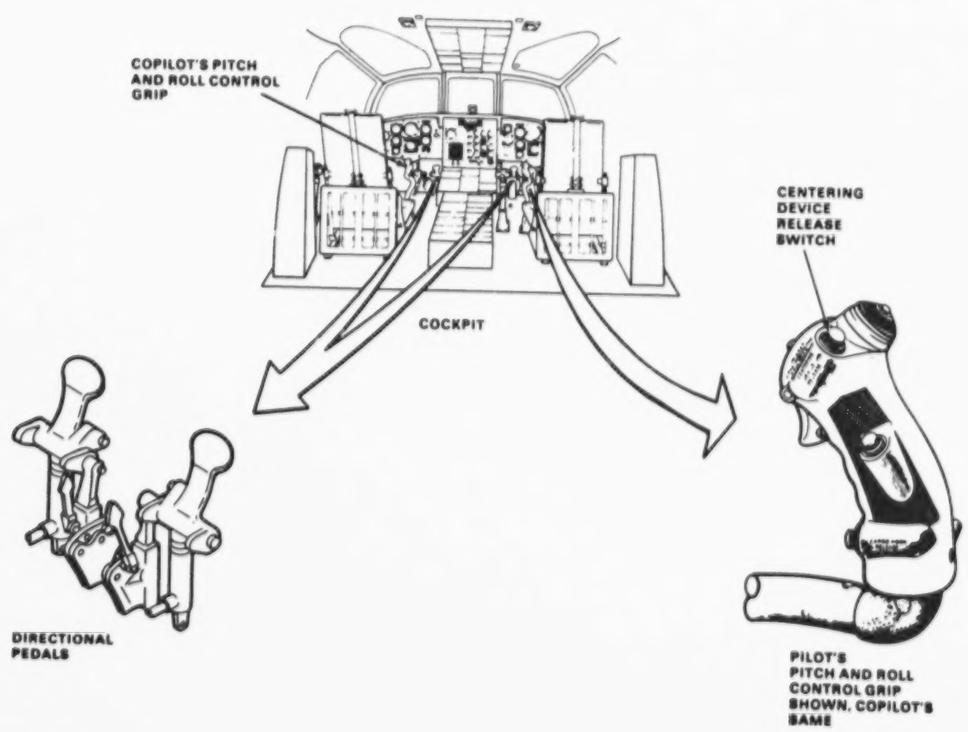
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

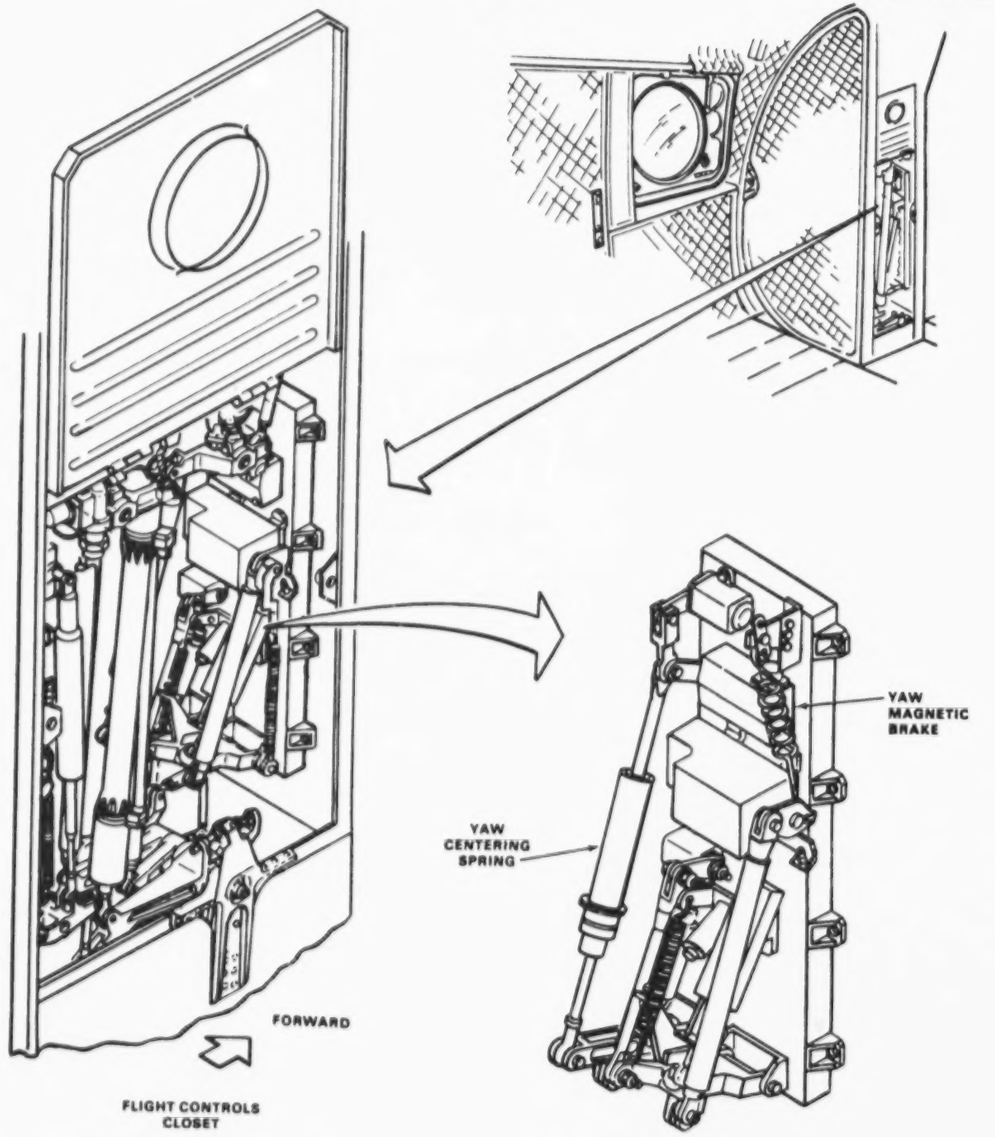
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55--1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On





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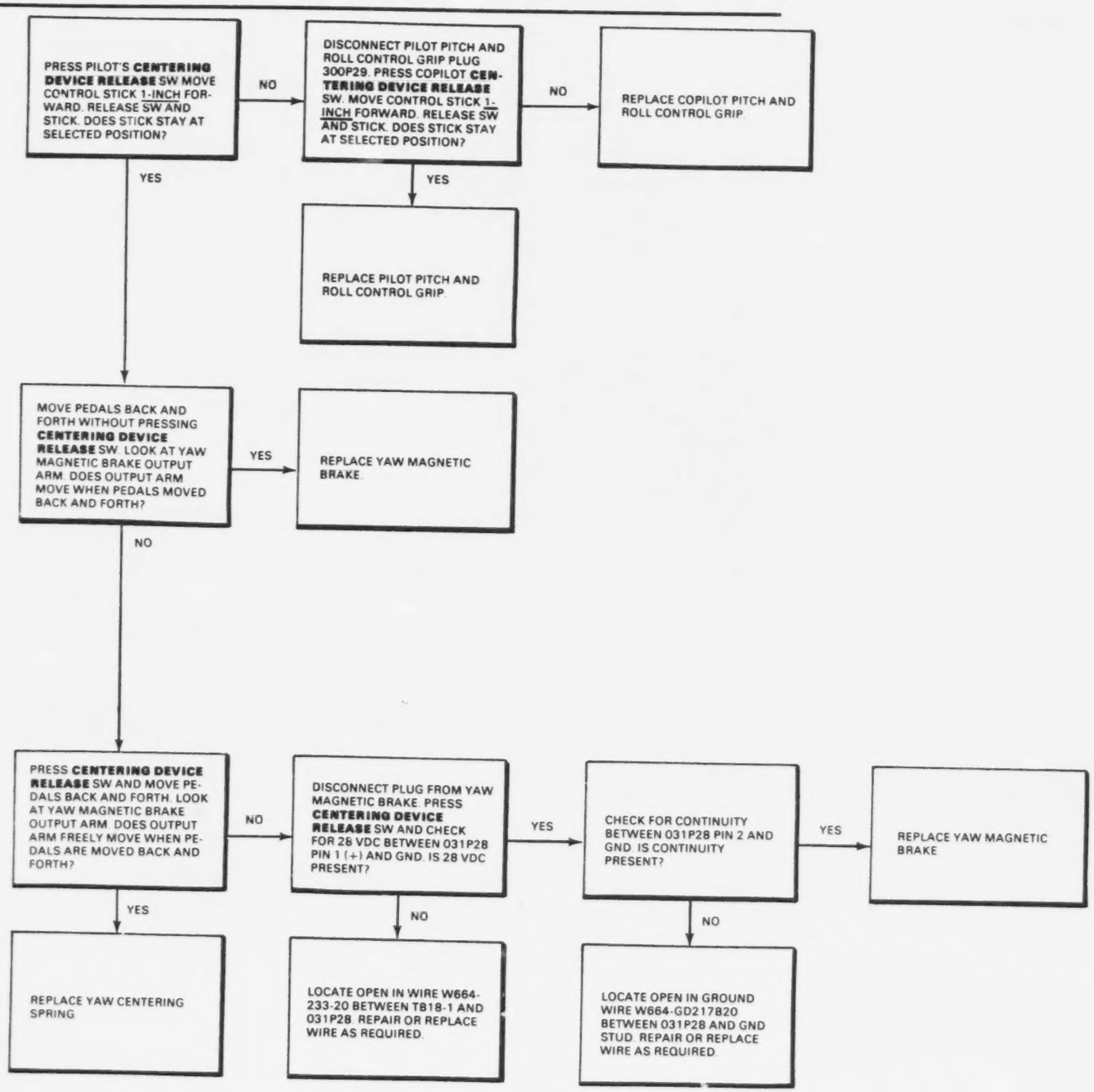
11-2.8 PEDALS DO NOT REMAIN AT SELECTED POSITION (Continued)


PRESS PILOT'S **CENTERING DEVICE RELEASE** SW MOVE CONTROL STICK 1-INCH FORWARD. RELEASE SW AND STICK. DOES STICK STAY AT SELECTED POSITION?
NO
DISCONNECT PILOT PITCH AND ROLL CONTROL GRIP PLUG 300P29. PRESS COPILOT **CENTERING DEVICE RELEASE** SW. MOVE CONTROL STICK 1-INCH FORWARD. RELEASE SW AND STICK. DOES STICK STAY AT SELECTED POSITION?
NO
REPLACE COPILOT PITCH AND ROLL CONTROL GRIP.
YES
YES
REPLACE PILOT PITCH AND ROLL CONTROL GRIP.
MOVE PEDALS BACK AND FORTH WITHOUT PRESSING **CENTERING DEVICE RELEASE** SW. LOOK AT YAW MAGNETIC BRAKE OUTPUT ARM. DOES OUTPUT ARM MOVE WHEN PEDALS MOVED BACK AND FORTH?
YES
REPLACE YAW MAGNETIC BRAKE.
NO
PRESS **CENTERING DEVICE RELEASE** SW AND MOVE PEDALS BACK AND FORTH. LOOK AT YAW MAGNETIC BRAKE OUTPUT ARM. DOES OUTPUT ARM FREELY MOVE WHEN PEDALS ARE MOVED BACK AND FORTH?
NO
DISCONNECT PLUG FROM YAW MAGNETIC BRAKE. PRESS **CENTERING DEVICE RELEASE** SW AND CHECK FOR 28 VDC BETWEEN 031P28 PIN 1 (+) AND GND. IS 28 VDC PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN 031P28 PIN 2 AND GND. IS CONTINUITY PRESENT?
YES
REPLACE YAW MAGNETIC BRAKE.
YES
REPLACE YAW CENTERING SPRING.
NO
LOCATE OPEN IN WIRE W664-233-20 BETWEEN TB18-1 AND 031P28. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN GROUND WIRE W664-GD217B20 BETWEEN 031P28 AND GND STUD. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-2.9 PILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

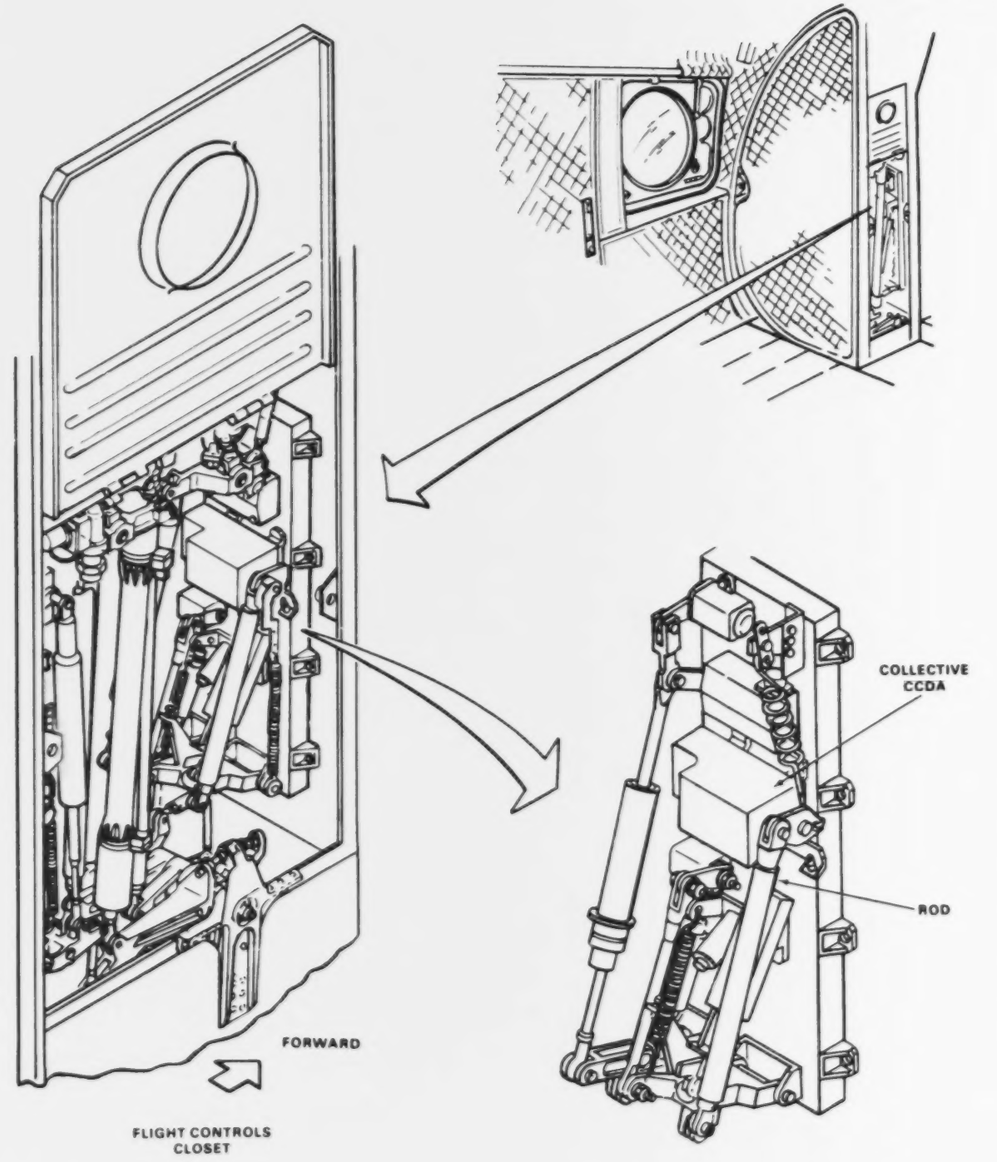
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Multimeter

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On



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D145-4220-SPA

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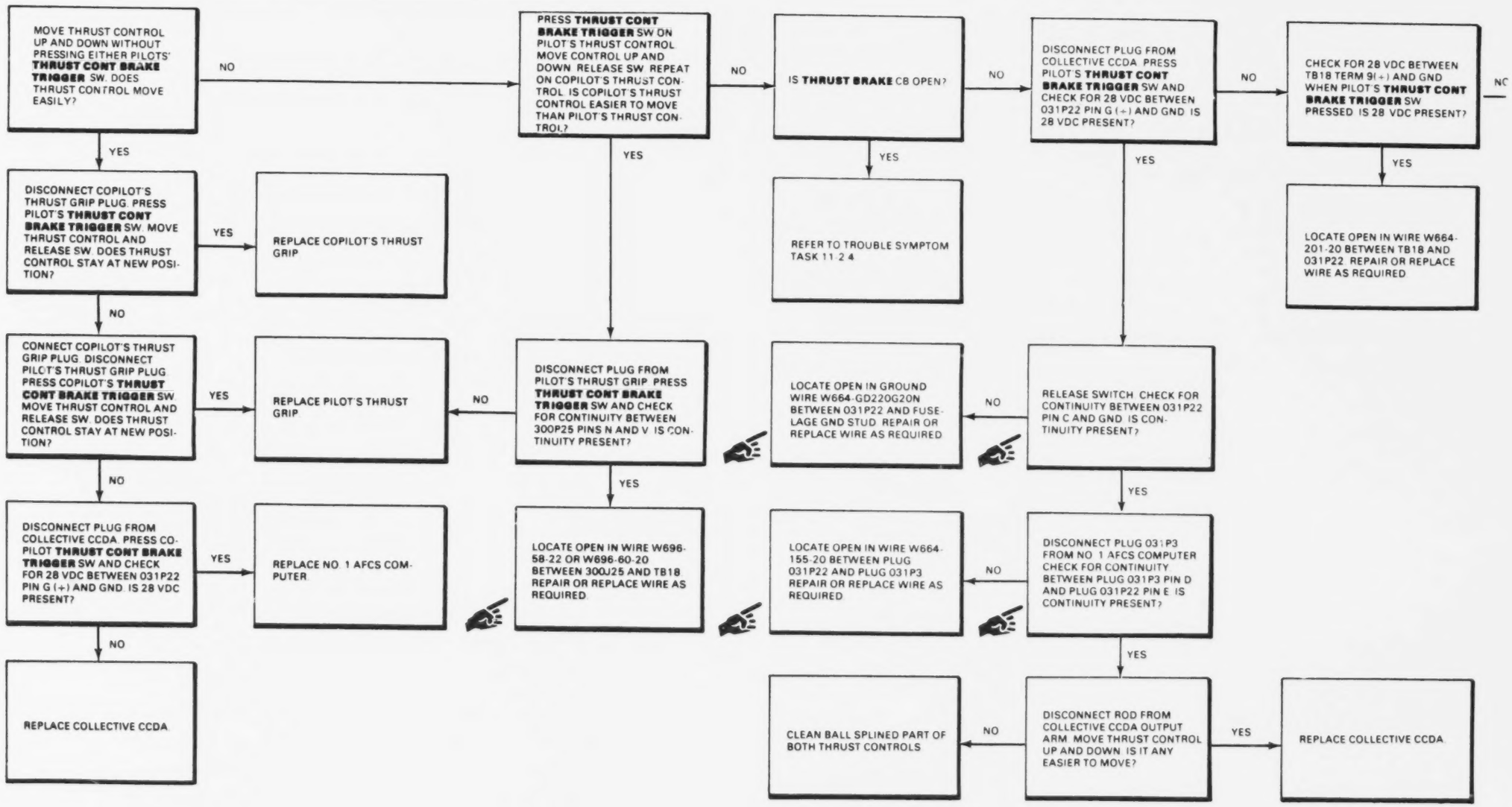
11-2.9 PILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION (Continued)


MOVE THRUST CONTROL UP AND DOWN WITHOUT PRESSING EITHER PILOTS' THRUST CONT BRAKE TRIGGER SW. DOES THRUST CONTROL MOVE EASILY?
NO
YES
PRESS THRUST CONT BRAKE TRIGGER SW ON PILOT'S THRUST CONTROL MOVE CONTROL UP AND DOWN. RELEASE SW. REPEAT ON COPILOT'S THRUST CONTROL. IS COPILOT'S THRUST CONTROL EASIER TO MOVE THAN PILOT'S THRUST CONTROL?
NO
YES
IS THRUST BRAKE CB OPEN?
NO
YES
REFER TO TROUBLE SYMPTOM TASK 11-2-4
DISCONNECT PLUG FROM COLLECTIVE CCDA. PRESS PILOT'S THRUST CONT BRAKE TRIGGER SW AND CHECK FOR 28 VDC BETWEEN 031P22 PIN G (+) AND GND. IS 28 VDC PRESENT?
NO
YES
CHECK FOR 28 VDC BETWEEN TB18 TERM 9(+) AND GND WHEN PILOT'S THRUST CONT BRAKE TRIGGER SW PRESSED. IS 28 VDC PRESENT?
NO
YES
LOCATE OPEN IN WIRE W664-201-20 BETWEEN TB18 AND 031P22. REPAIR OR REPLACE WIRE AS REQUIRED
DISCONNECT COPILOT'S THRUST GRIP PLUG. PRESS PILOT'S THRUST CONT BRAKE TRIGGER SW. MOVE THRUST CONTROL AND RELEASE SW. DOES THRUST CONTROL STAY AT NEW POSITION?
YES
REPLACE COPILOT'S THRUST GRIP
NO
CONNECT COPILOT'S THRUST GRIP PLUG. DISCONNECT PILOT'S THRUST GRIP PLUG. PRESS COPILOT'S THRUST CONT BRAKE TRIGGER SW. MOVE THRUST CONTROL AND RELEASE SW. DOES THRUST CONTROL STAY AT NEW POSITION?
YES
REPLACE PILOT'S THRUST GRIP
NO
DISCONNECT PLUG FROM PILOT'S THRUST GRIP. PRESS THRUST CONT BRAKE TRIGGER SW AND CHECK FOR CONTINUITY BETWEEN 300P25 PINS N AND V. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN GROUND WIRE W664-GD220G20N BETWEEN 031P22 AND FUSELAGE GND STUD. REPAIR OR REPLACE WIRE AS REQUIRED
NO
RELEASE SWITCH. CHECK FOR CONTINUITY BETWEEN 031P22 PIN C AND GND. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG FROM COLLECTIVE CCDA. PRESS COPILOT THRUST CONT BRAKE TRIGGER SW AND CHECK FOR 28 VDC BETWEEN 031P22 PIN G (+) AND GND. IS 28 VDC PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER
NO
LOCATE OPEN IN WIRE W696-58-22 OR W696-60-20 BETWEEN 300J25 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-155-20 BETWEEN PLUG 031P22 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED
NO
DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. CHECK FOR CONTINUITY BETWEEN PLUG 031P3 PIN D AND PLUG 031P22 PIN E. IS CONTINUITY PRESENT?
YES
REPLACE COLLECTIVE CCDA
CLEAN BALL SPLINED PART OF BOTH THRUST CONTROLS
NO
DISCONNECT ROD FROM COLLECTIVE CCDA OUTPUT ARM. MOVE THRUST CONTROL UP AND DOWN. IS IT ANY EASIER TO MOVE?
YES
REPLACE COLLECTIVE CCDA

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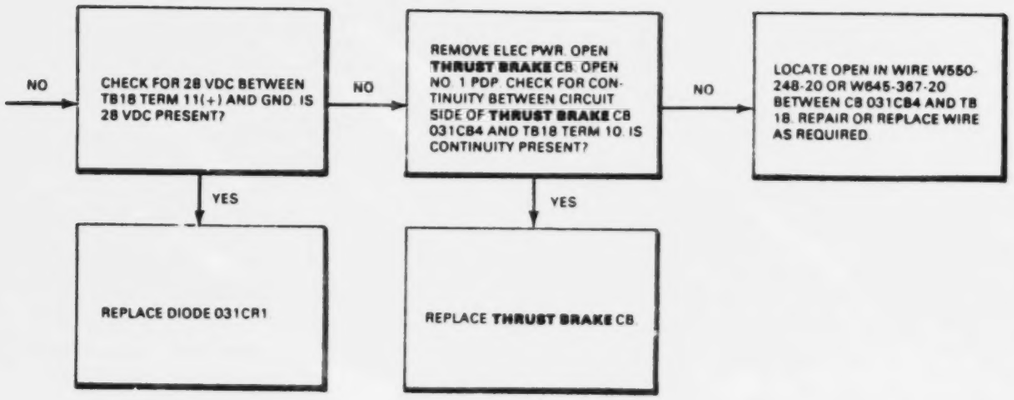
11-2.9 PILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION (Continued)


NO
CHECK FOR 28 VDC BETWEEN TB18 TERM 11(+) AND GND. IS 28 VDC PRESENT?
NO
REMOVE ELEC PWR. OPEN THRUST BRAKE CB. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF THRUST BRAKE CB 031CB4 AND TB18 TERM 10. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W550-248-20 OR W645-367-20 BETWEEN CB 031CB4 AND TB 18. REPAIR OR REPLACE WIRE AS REQUIRED
YES
REPLACE DIODE 031CR1
YES
REPLACE THRUST BRAKE CB

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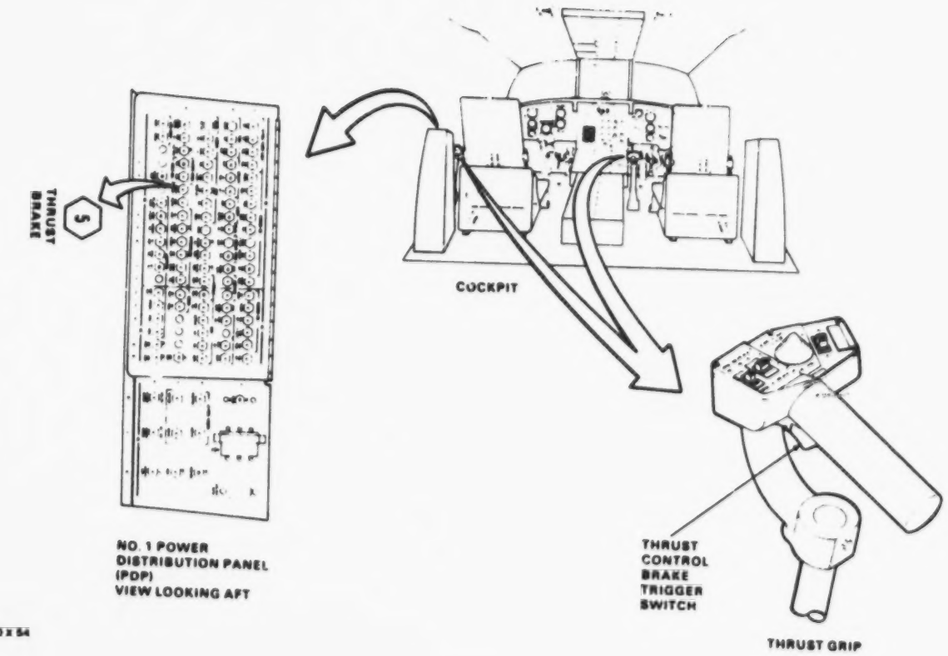
11-2.9 PILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION (Continued)



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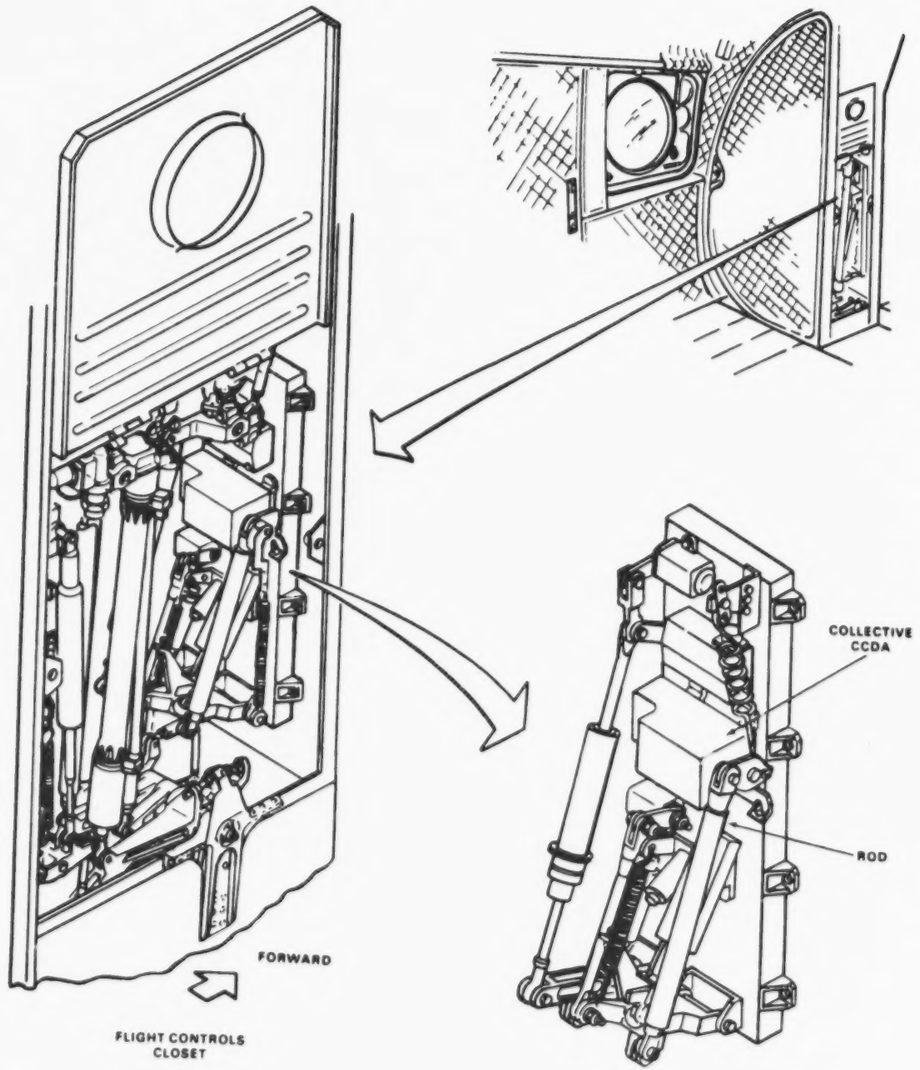

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END OF TASK

11-2.10 COPILOT'S THRUST CONTROL DOES NOT EASILY MOVE OR DOES NOT REMAIN AT SELECTED POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

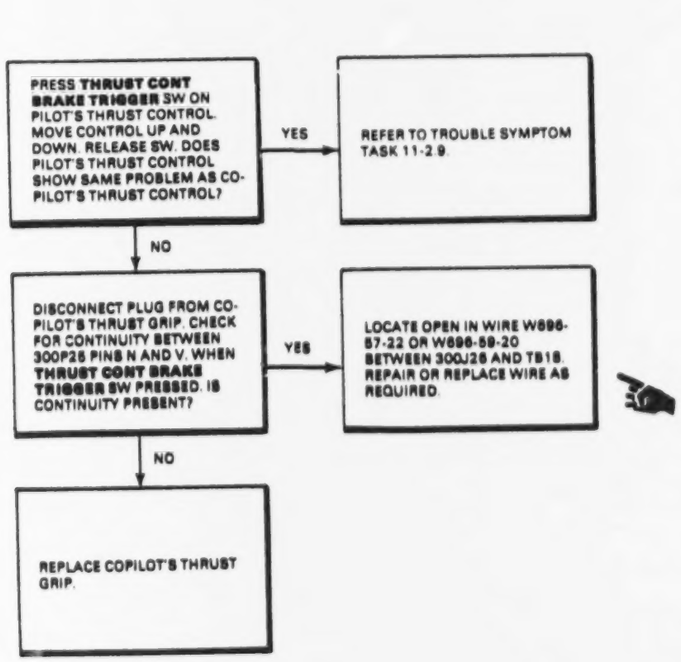
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

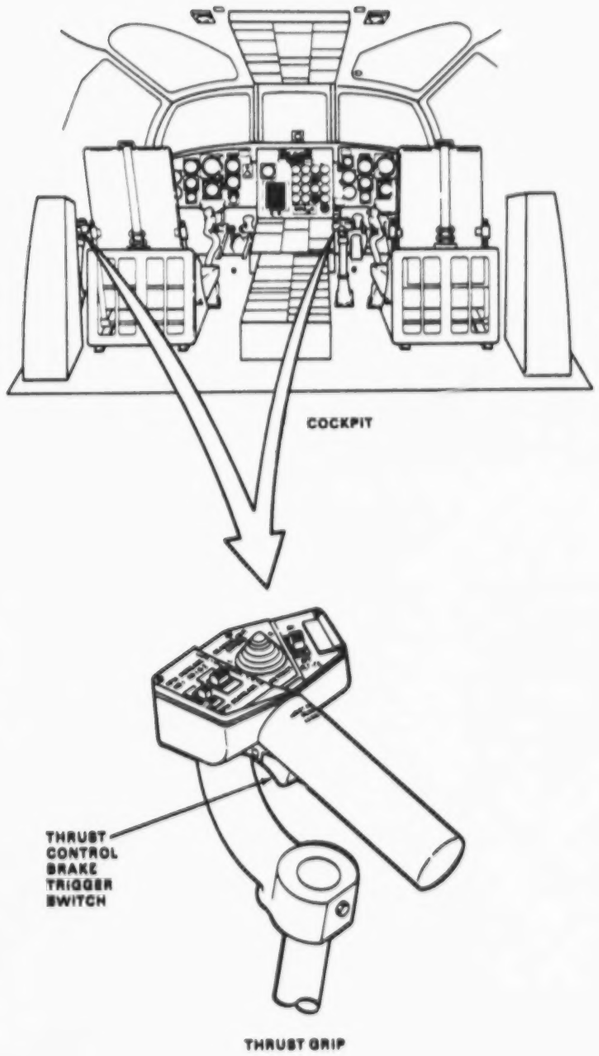
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On


PRESS THRUST CONT BRAKE TRIGGER SW ON PILOT'S THRUST CONTROL. MOVE CONTROL UP AND DOWN. RELEASE SW. DOES PILOT'S THRUST CONTROL SHOW SAME PROBLEM AS CO-PILOT'S THRUST CONTROL?
YES
REFER TO TROUBLE SYMPTOM TASK 11-2.9.
NO
DISCONNECT PLUG FROM CO-PILOT'S THRUST GRIP. CHECK FOR CONTINUITY BETWEEN 300P26 PINS N AND V. WHEN THRUST CONT BRAKE TRIGGER SW PRESSED. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W696-57-22 OR W696-59-20 BETWEEN 300J26 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE COPILOT'S THRUST GRIP.



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END OF TASK

11-2.11 CONTROL STICK WILL NOT REMAIN AT SELECTED POSITION AFTER COPILOT'S CENTERING DEVICE RELEASE SWITCH RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

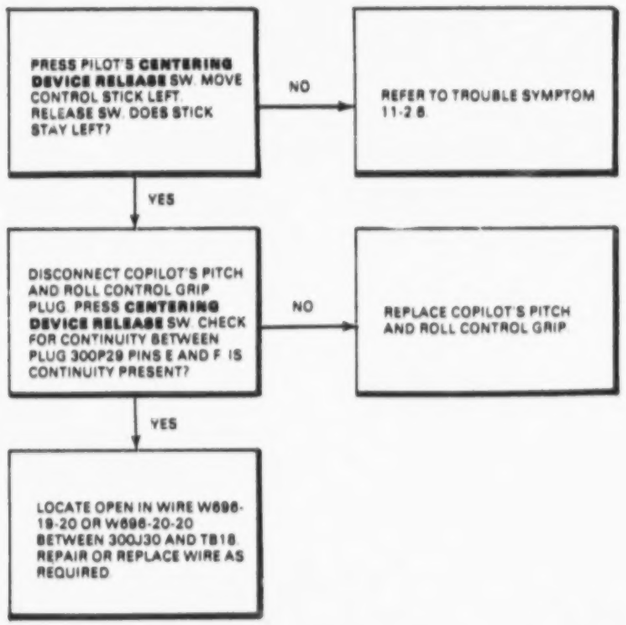
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

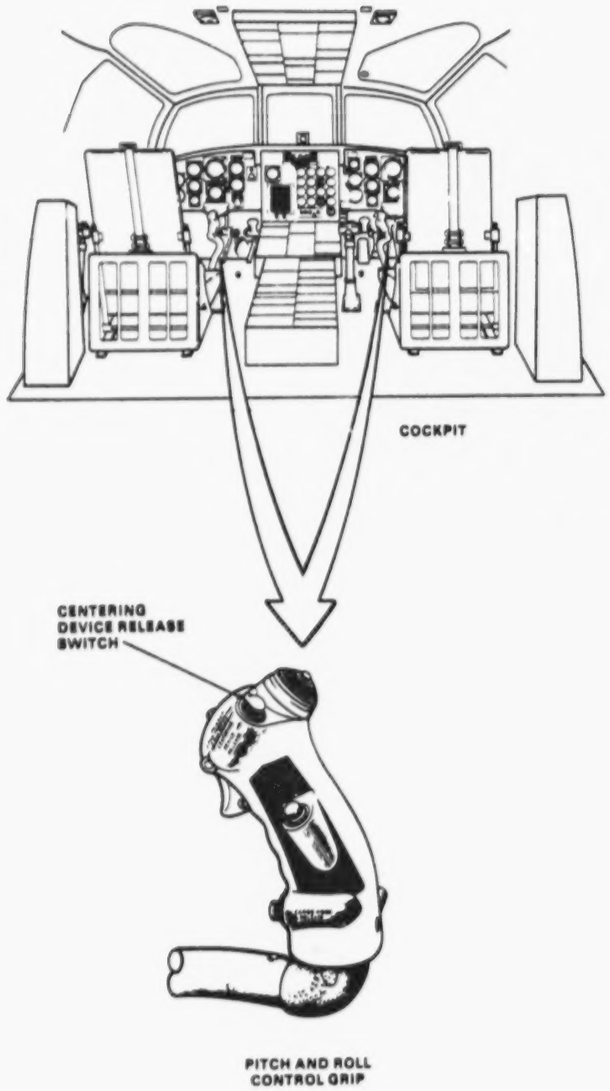
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

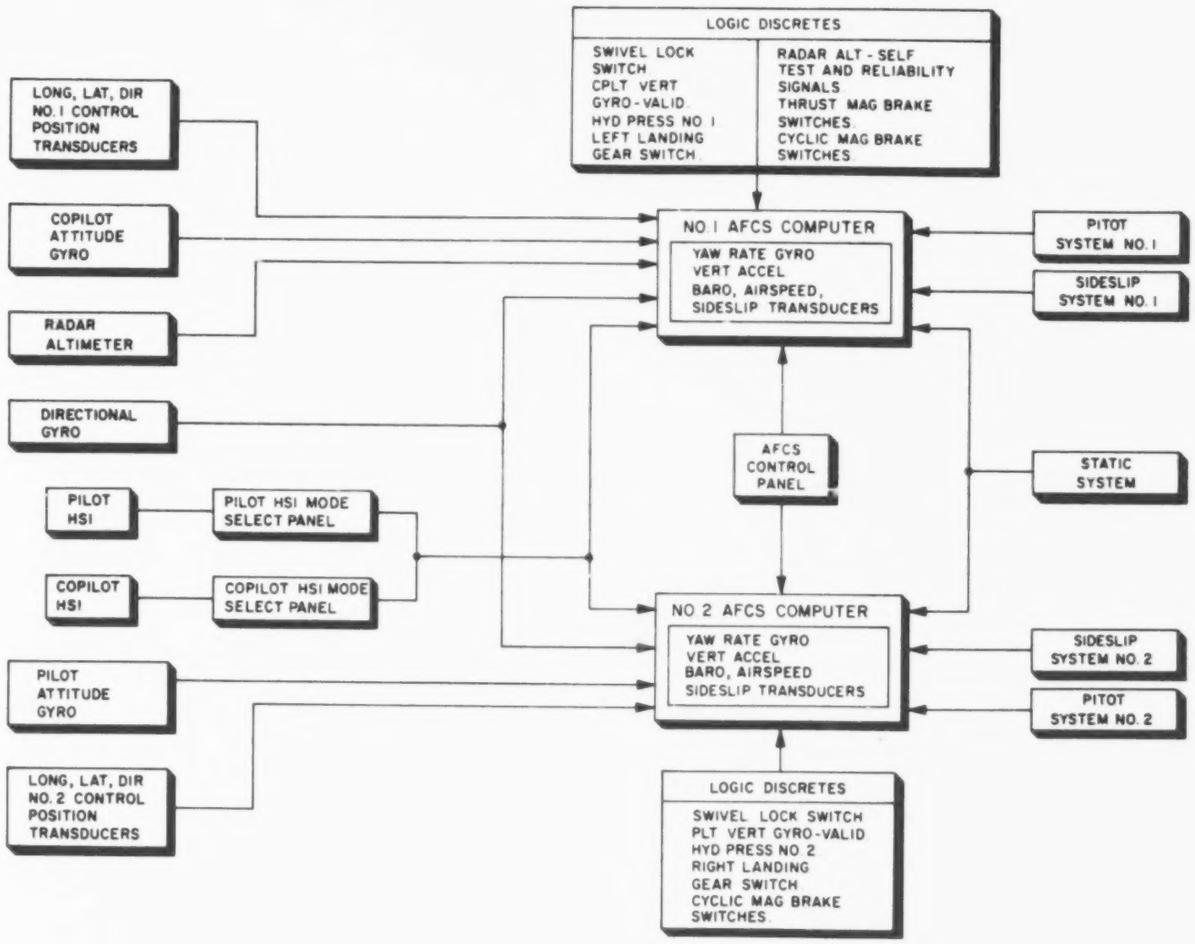
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

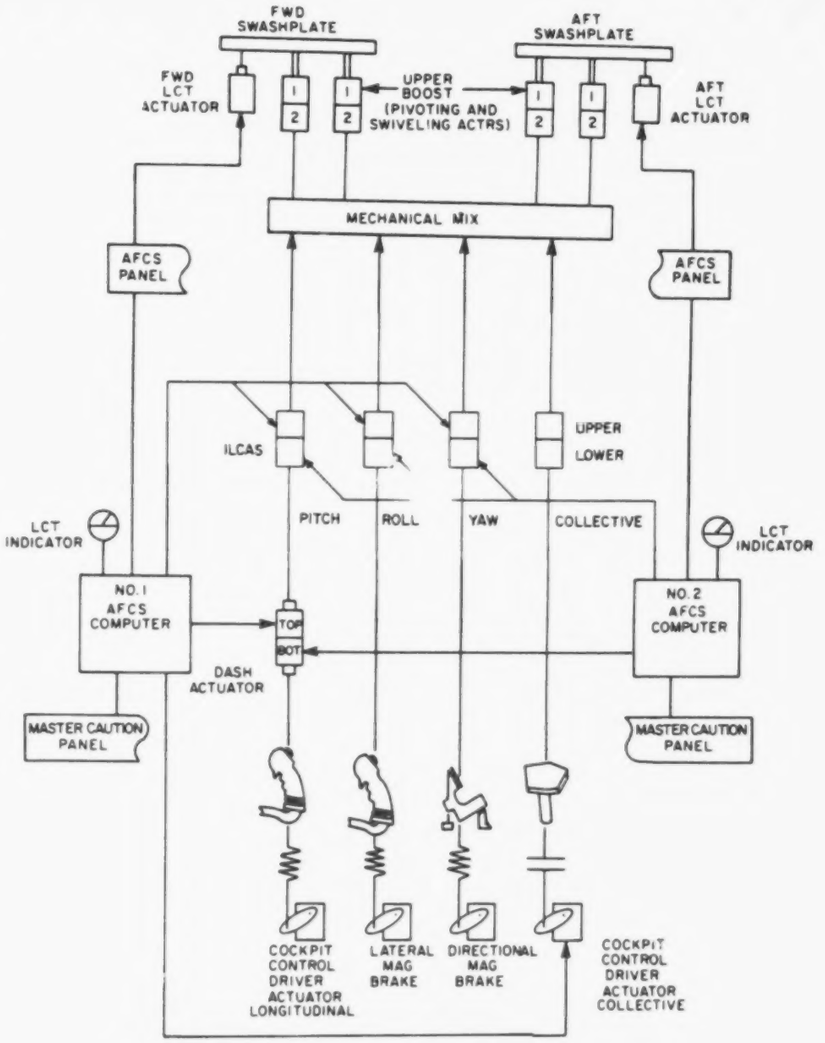

PRESS PILOT'S CENTERING DEVICE RELEASE SW. MOVE CONTROL STICK LEFT. RELEASE SW. DOES STICK STAY LEFT?
NO
REFER TO TROUBLE SYMPTOM 11-2.8.
YES
DISCONNECT COPILOT'S PITCH AND ROLL CONTROL GRIP PLUG. PRESS CENTERING DEVICE RELEASE SW. CHECK FOR CONTINUITY BETWEEN PLUG 300P29 PINS E AND F. IS CONTINUITY PRESENT?
NO
REPLACE COPILOT'S PITCH AND ROLL CONTROL GRIP.
YES
LOCATE OPEN IN WIRE W698-19-20 OR W698-20-20 BETWEEN 300J30 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.



11-3 AFCS



AFCS SENSOR INPUTS



NO.1 AND NO.2 AFCS COMPONENT INTERFACES

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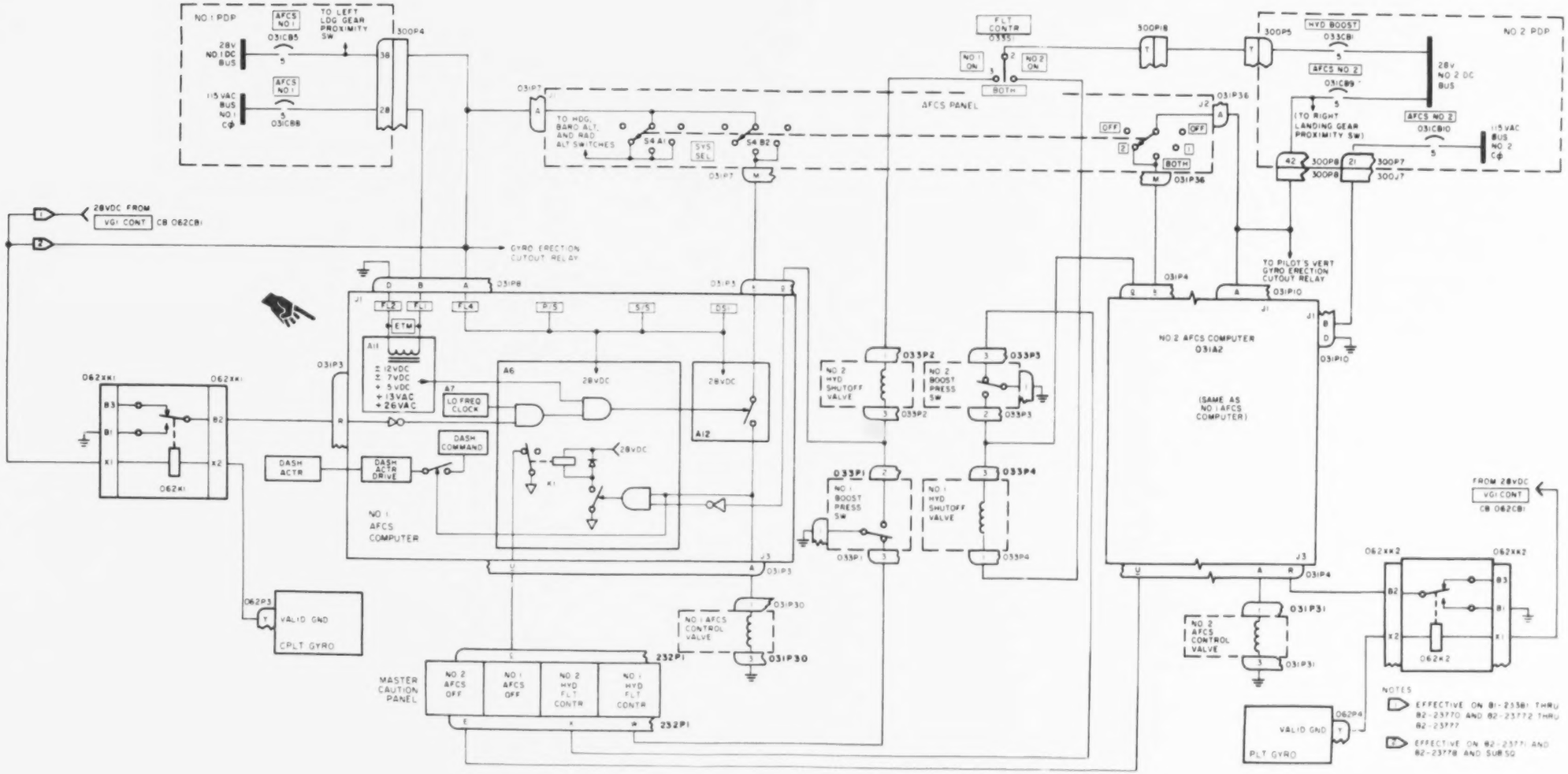

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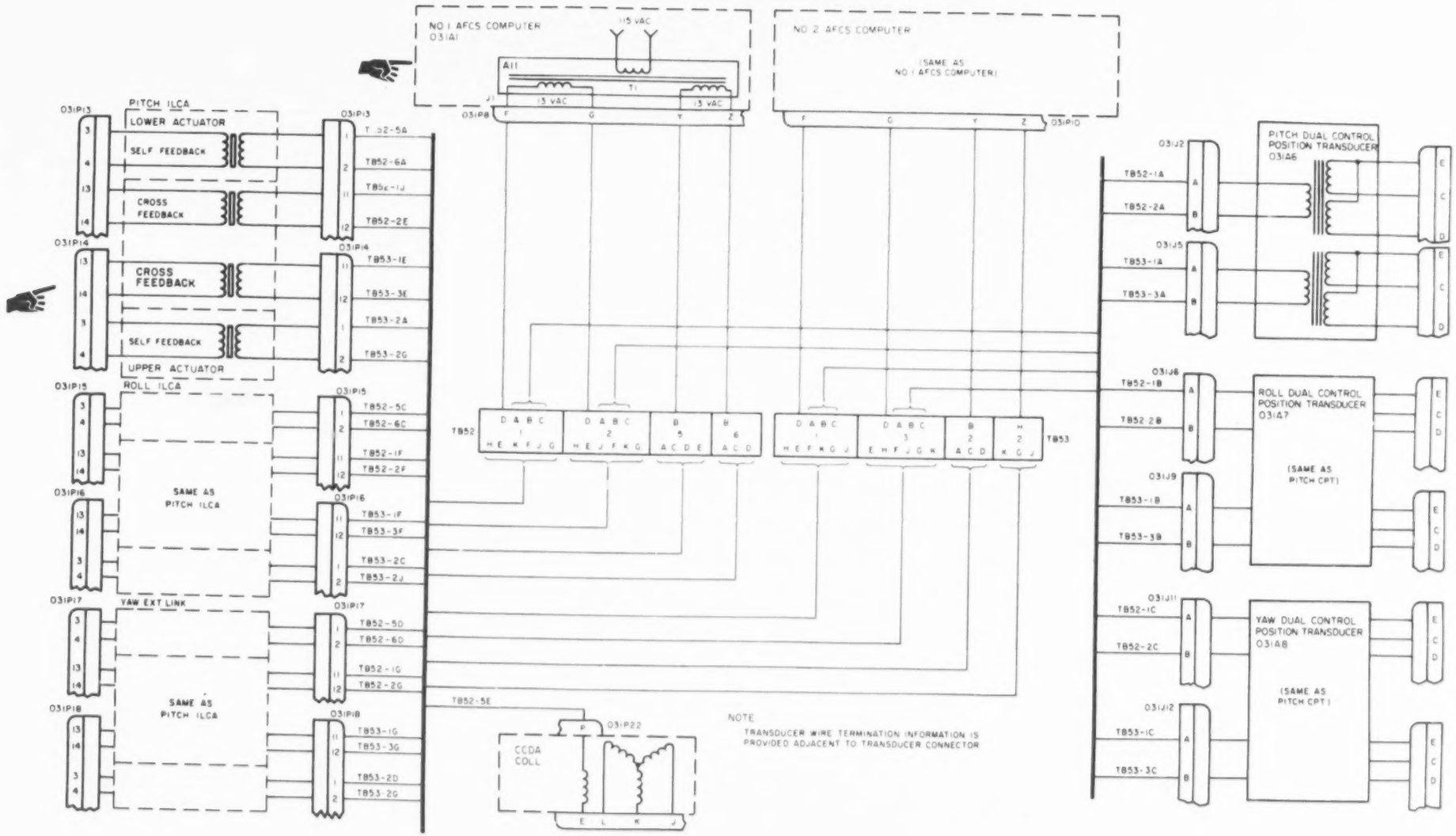

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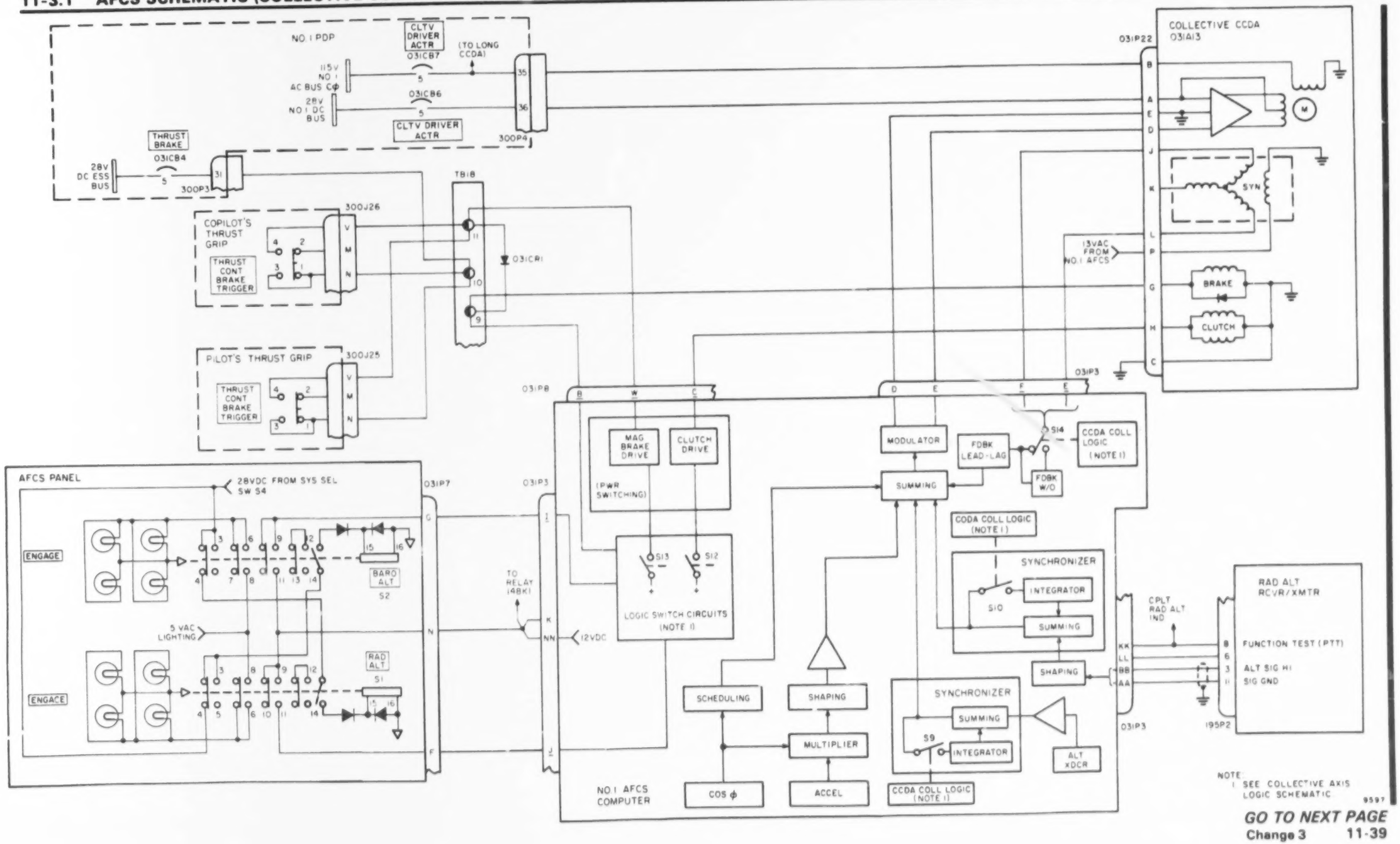
11-3 AFCS

11-3.1 AFCS SCHEMATIC (COLLECTIVE CCDA POWER AND CONTROL)



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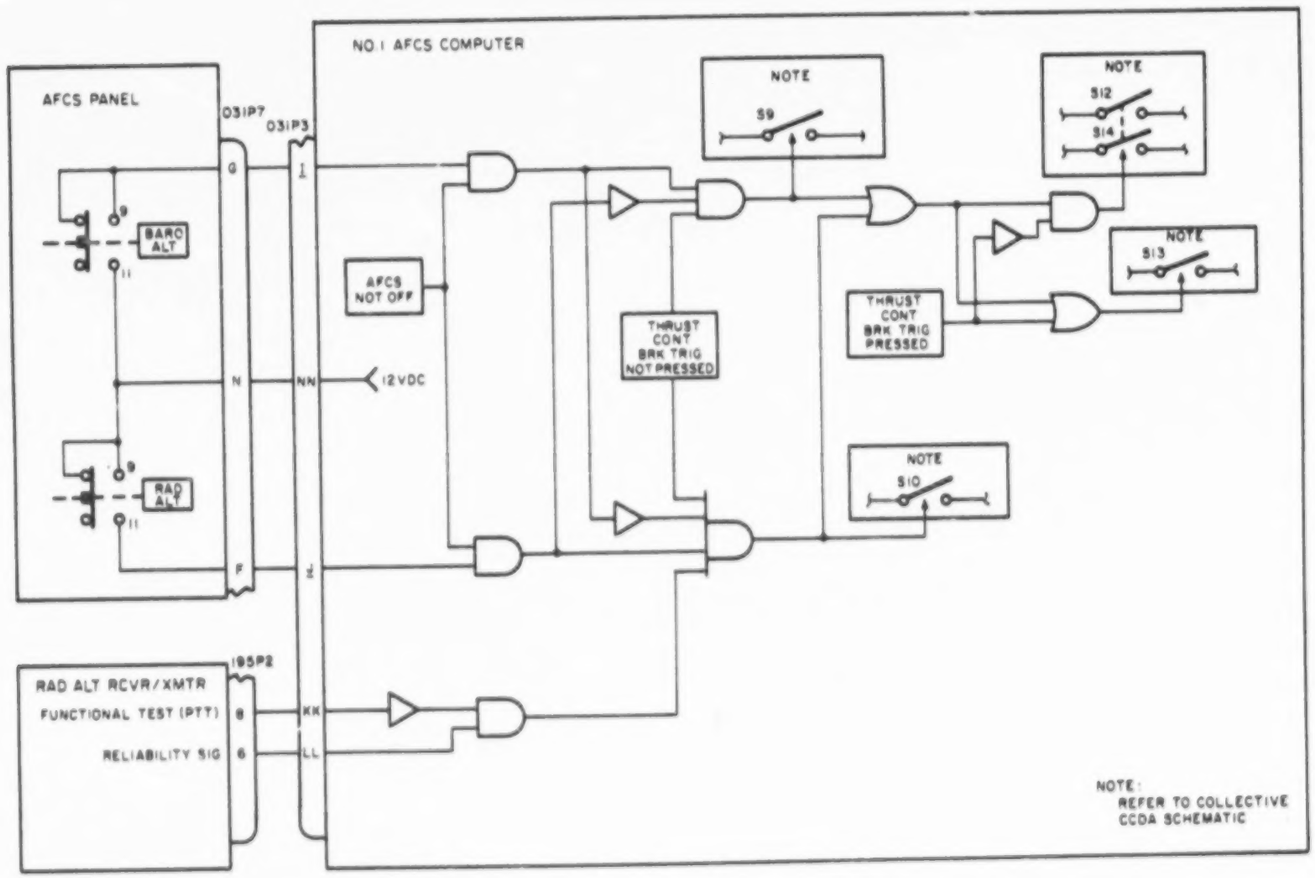

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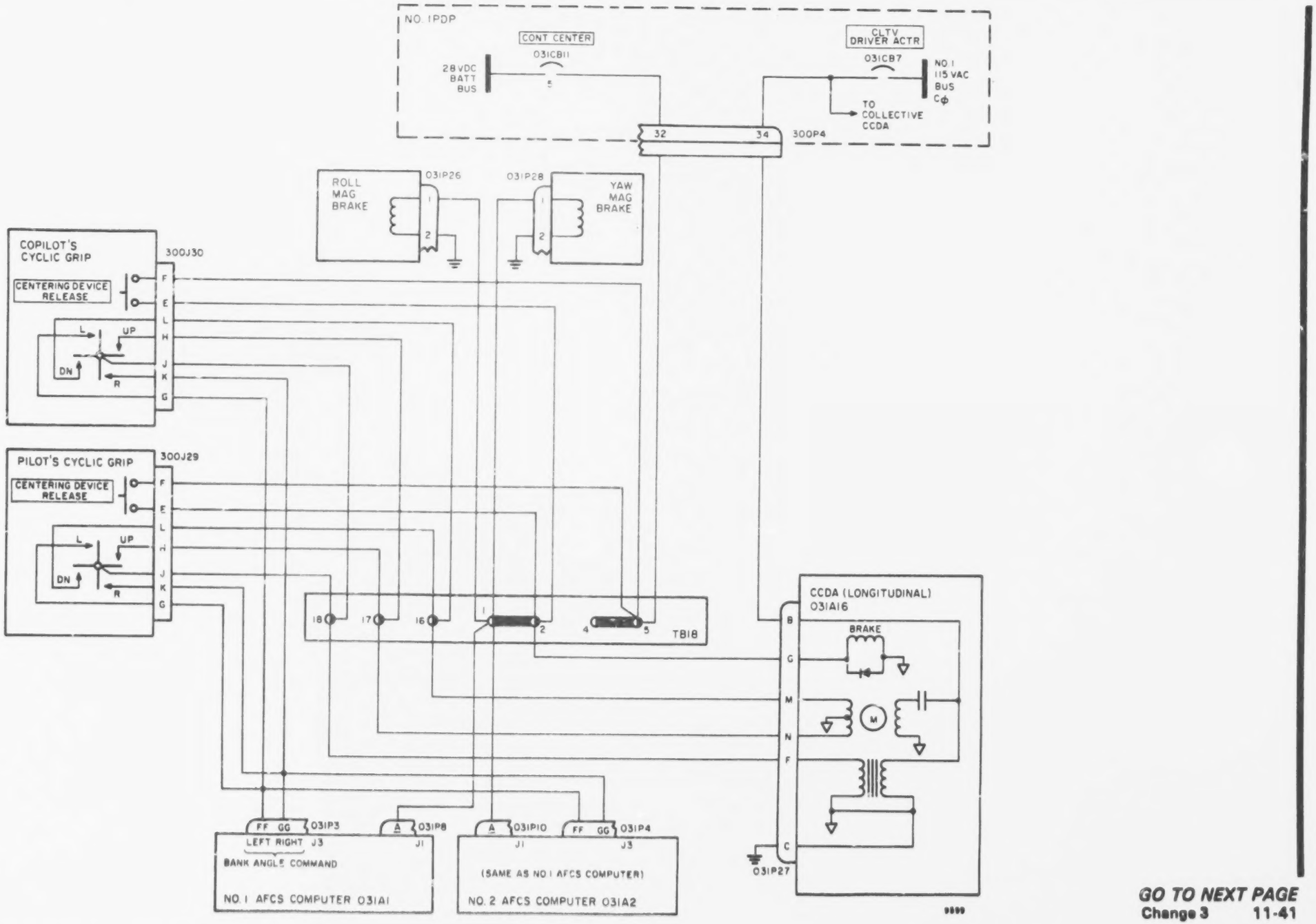

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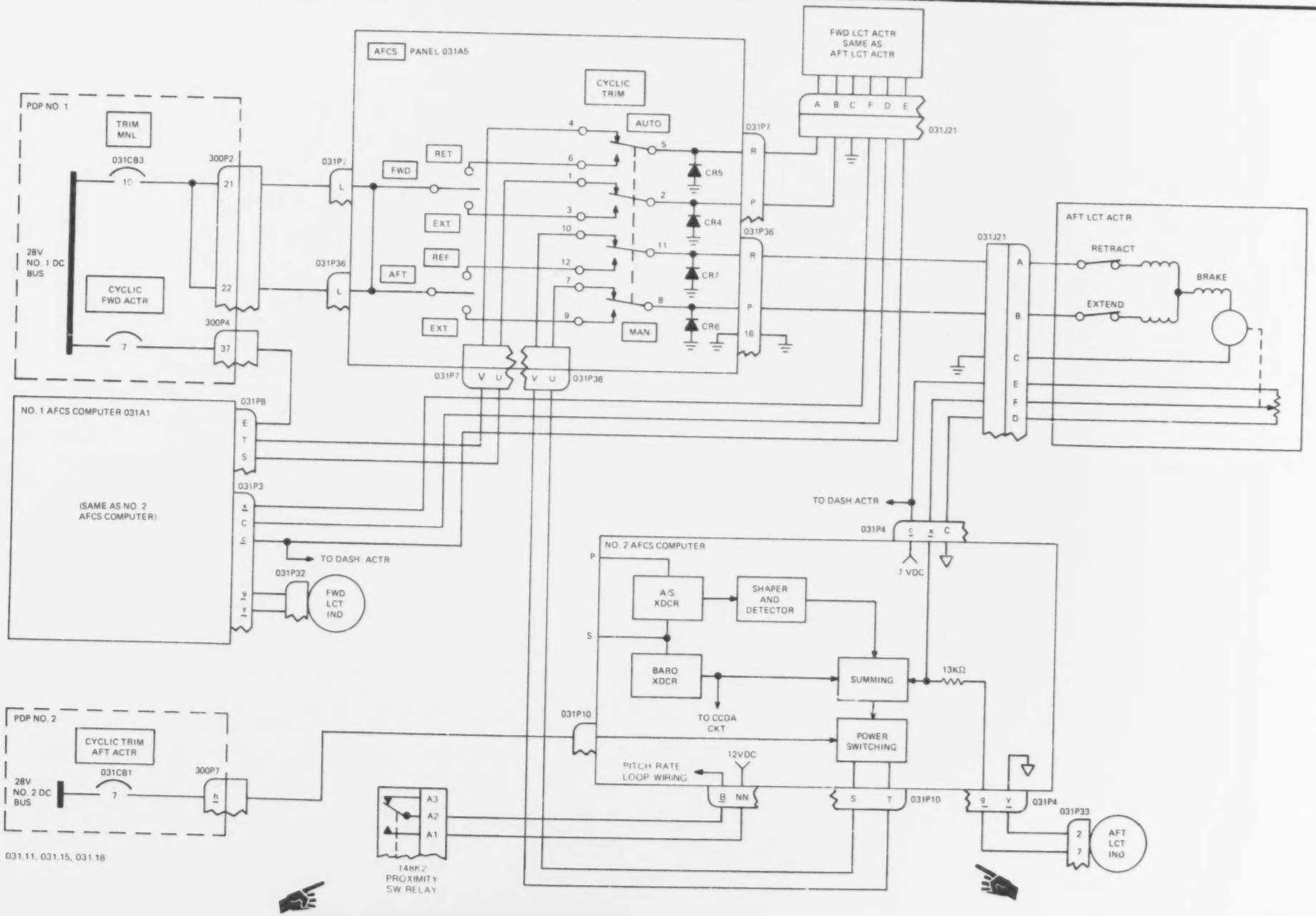

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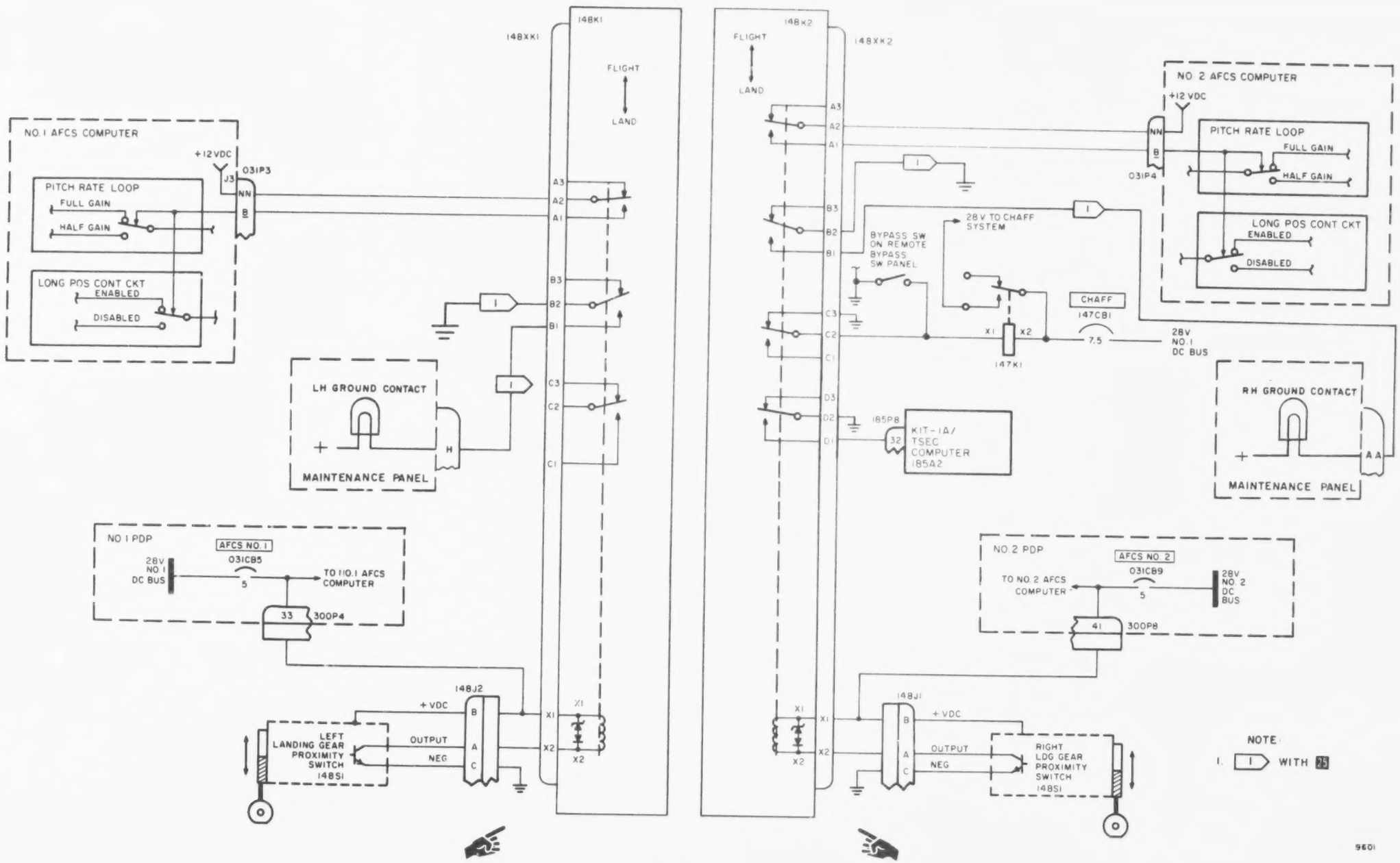

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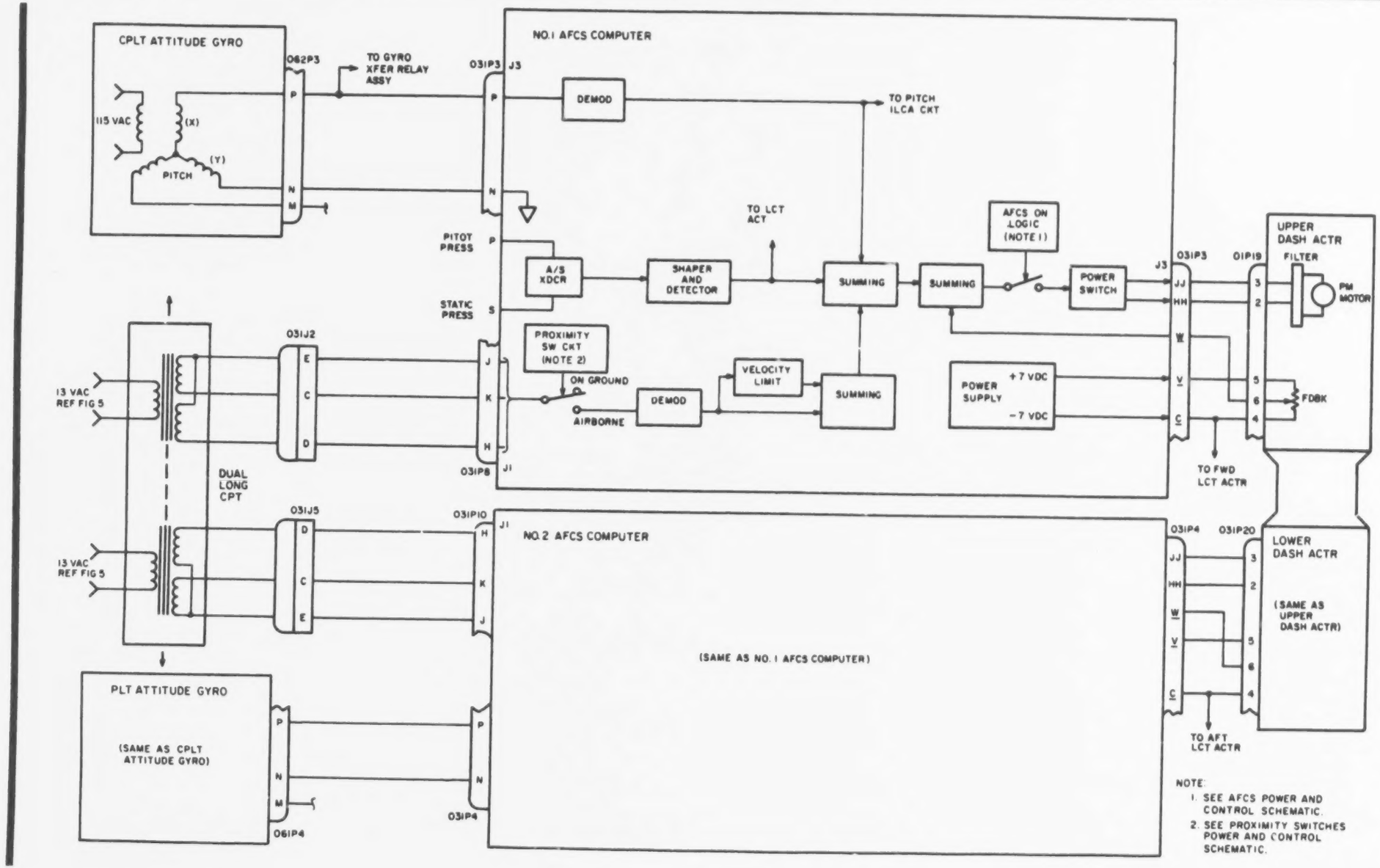

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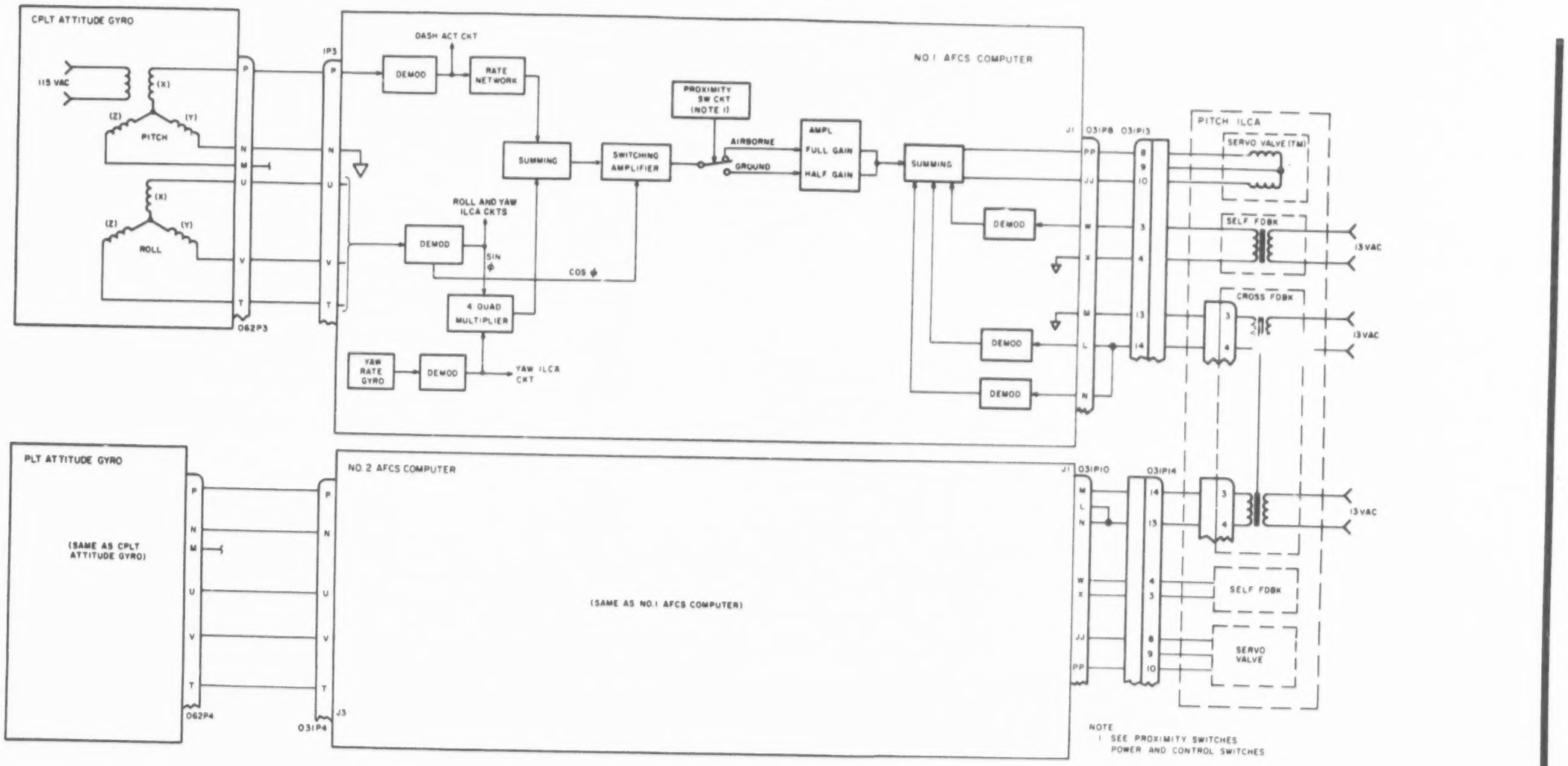

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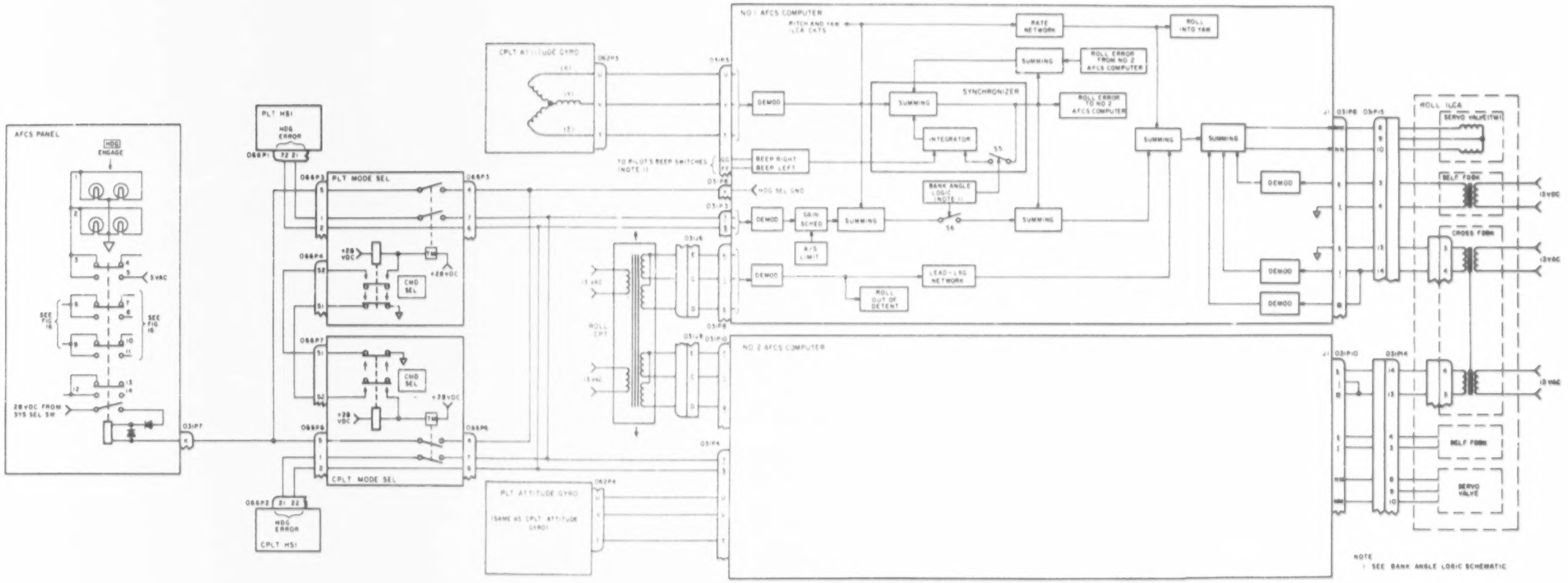

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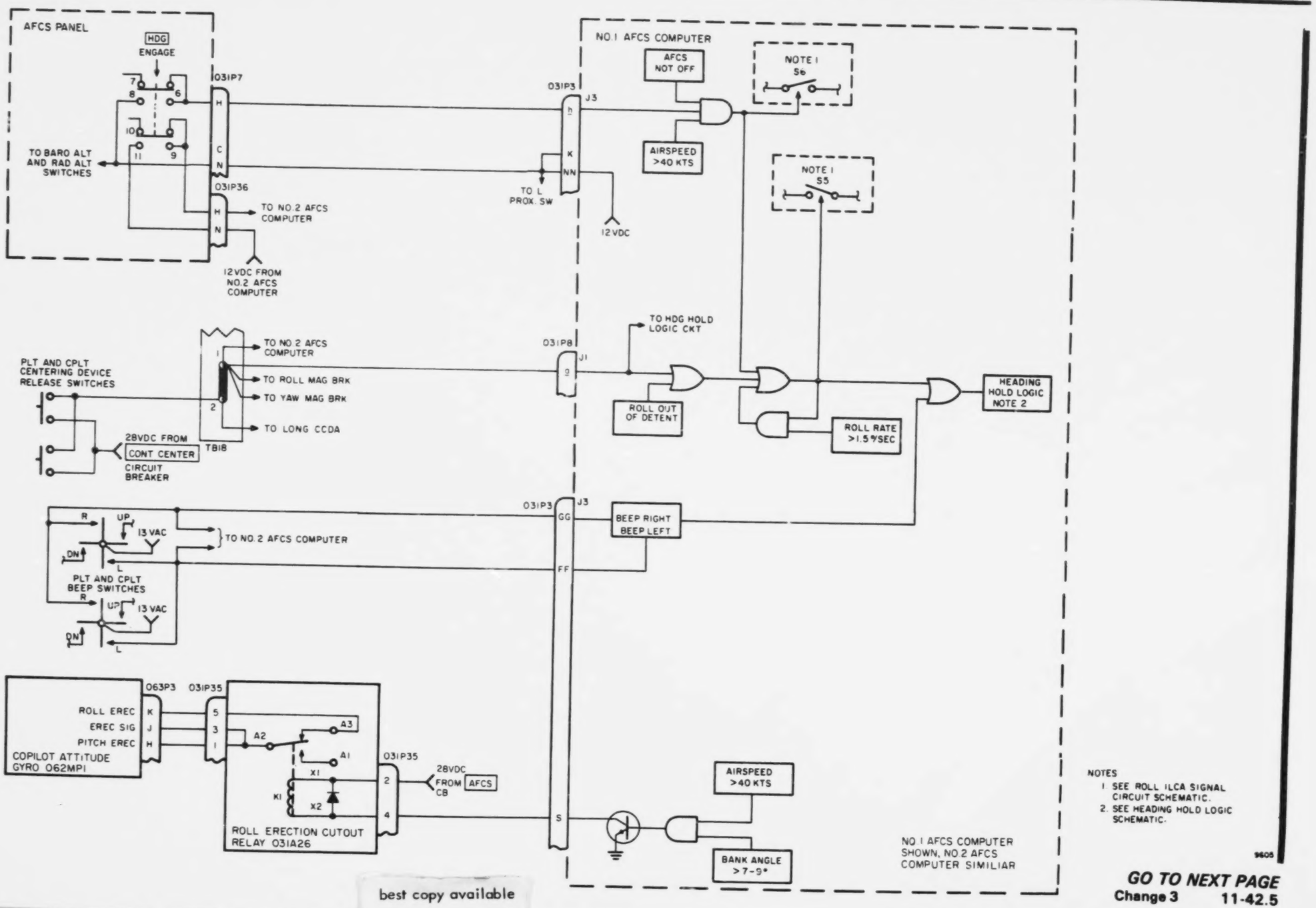

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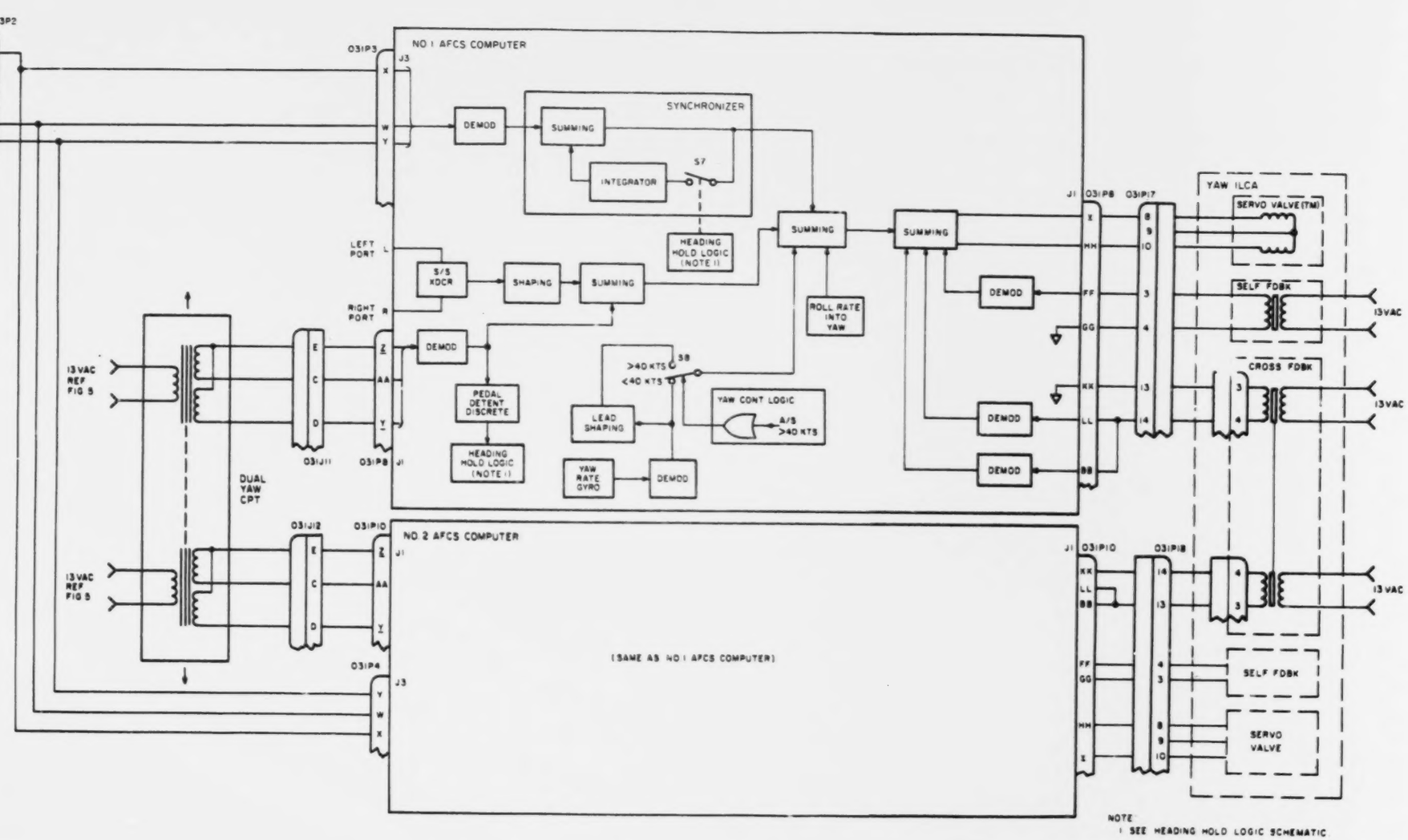

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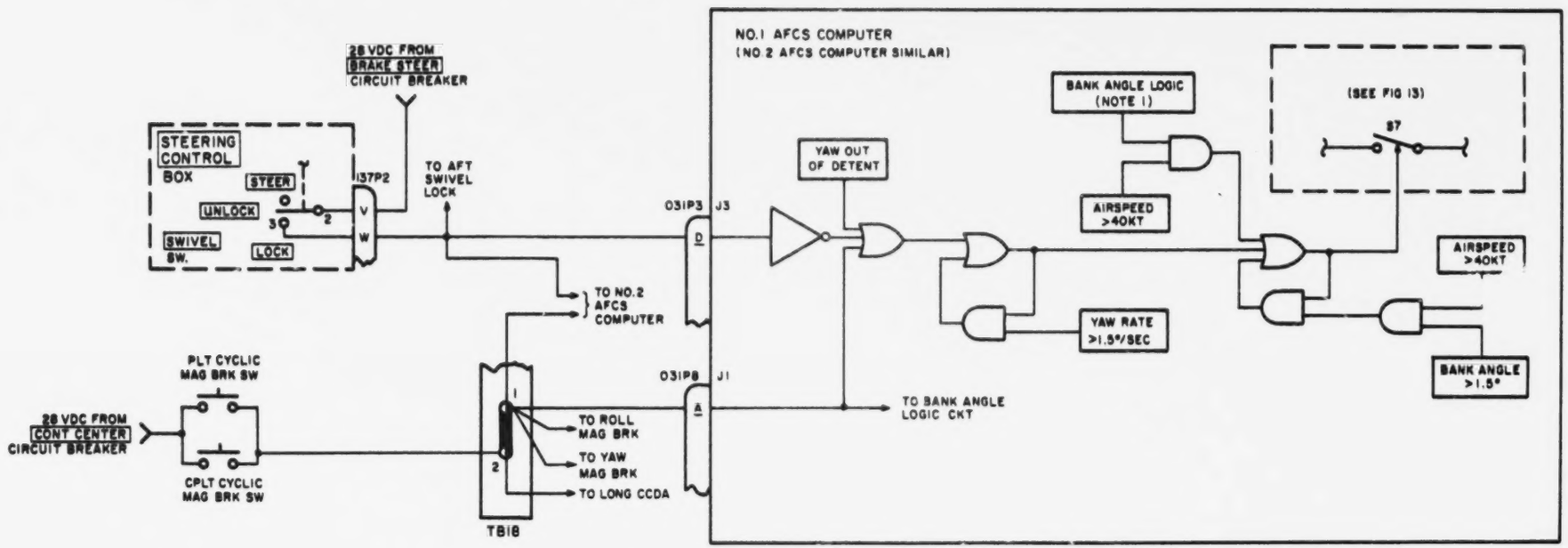

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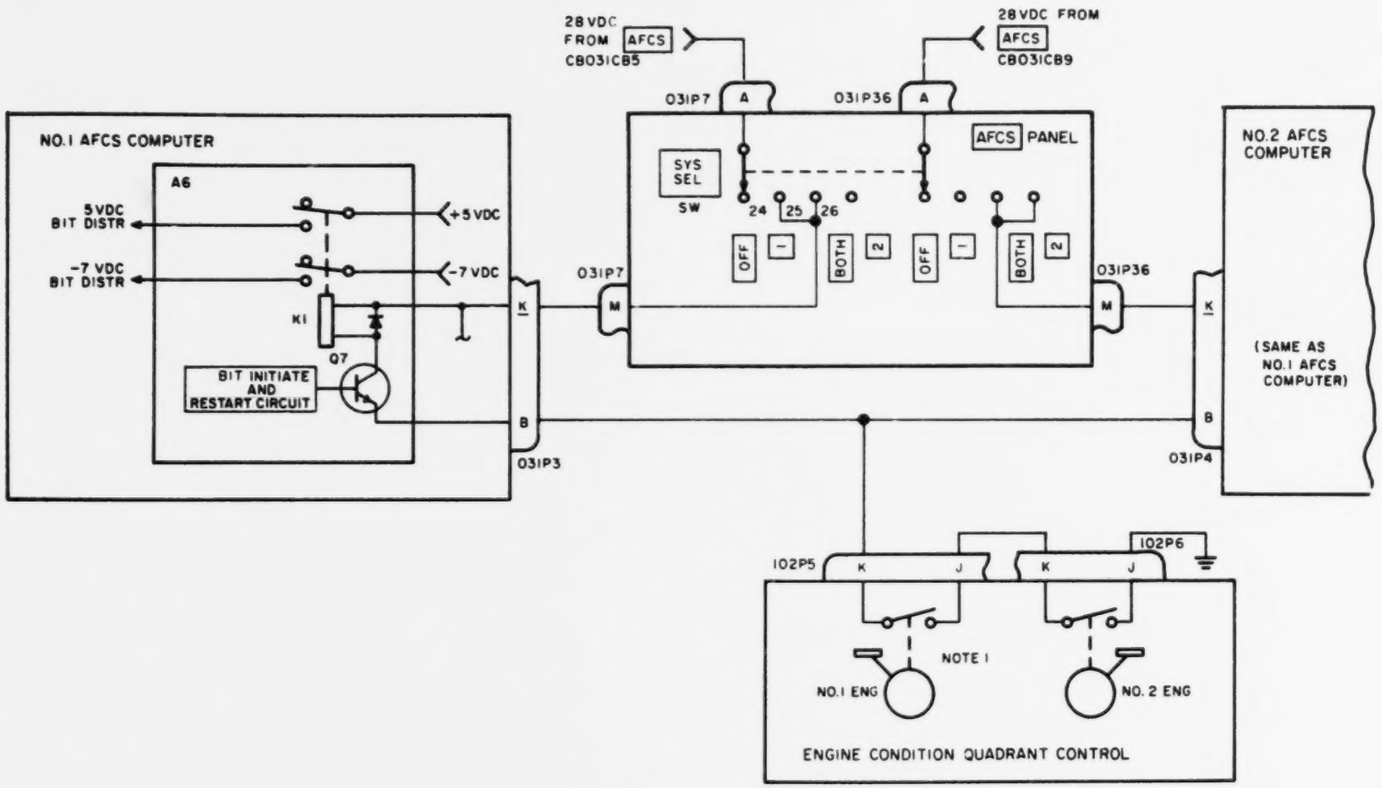
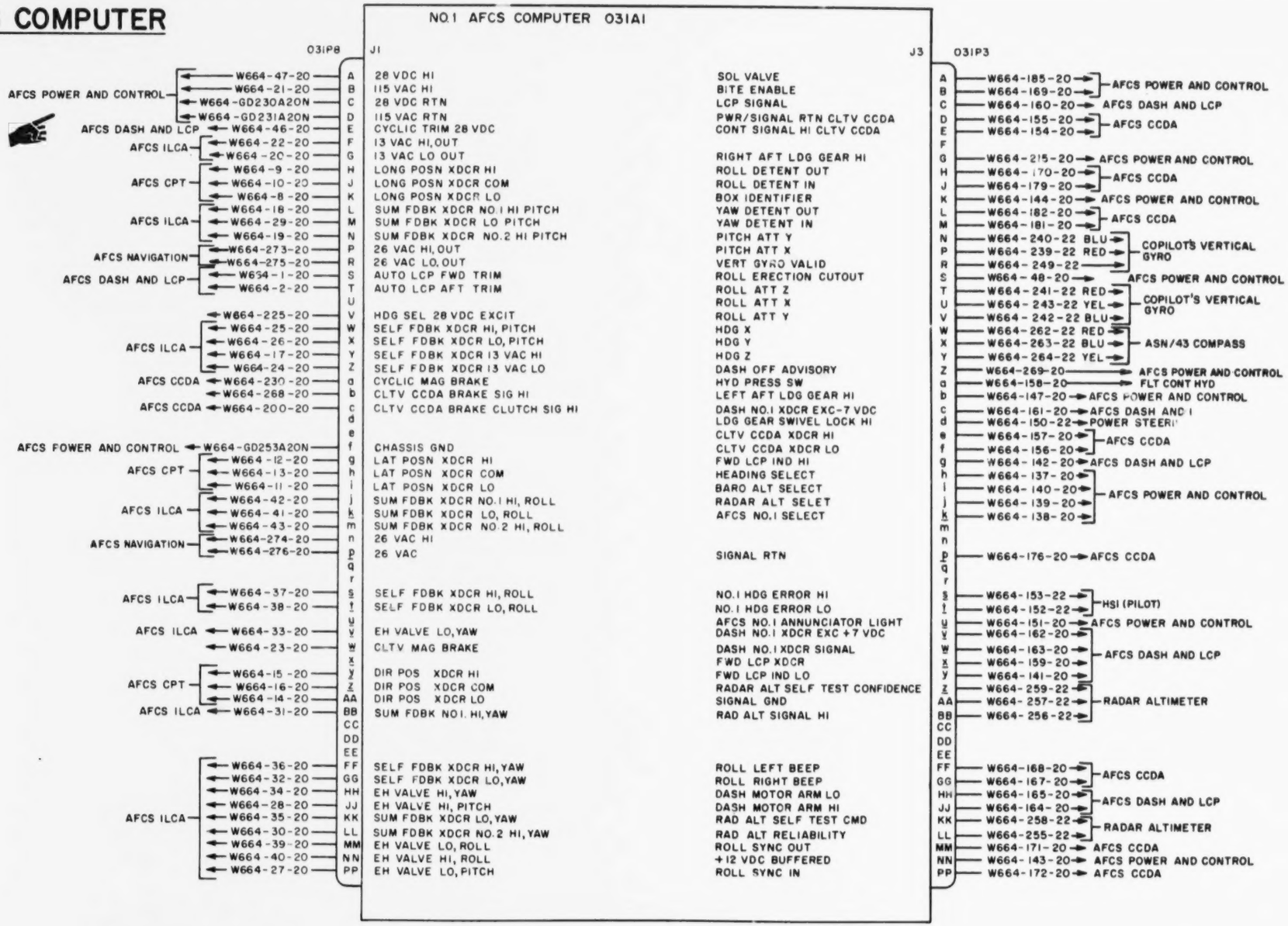


NOTE:
1. SWITCH CLOSED WITH LEVER IN STOP

9608

END OF TASK

NO I AFCS COMPUTER


NO.1 AFCS COMPUTER 031A1
031P8
J1
J3
031P3
W664-47-20 A 28 VDC HI
W664-21-20 B 115 VAC HI
AFCS POWER AND CONTROL
W664-GD230A20N C 28 VDC RTN
W664-GD231A20N D 115 VAC RTN
AFCS DASH AND LCP W664-46-20 E CYCLIC TRIM 28 VDC
AFCS ILCA W664-22-20 F 13 VAC HI, OUT
W664-20-20 G 13 VAC LO OUT
W664-9-20 H LONG POSN XDCR HI
AFCS CPT W664-10-20 J LONG POSN XDCR COM
W664-8-20 K LONG POSN XDCR LO
W664-18-20 L SUM FDBK XDCR NO.1 HI PITCH
AFCS ILCA W664-29-20 M SUM FDBK XDCR LO PITCH
W664-19-20 N SUM FDBK XDCR NO.2 HI PITCH
AFCS NAVIGATION W664-273-20 P 26 VAC HI, OUT
W664-275-20 R 26 VAC LO, OUT
AFCS DASH AND LCP W634-1-20 S AUTO LCP FWD TRIM
W664-2-20 T AUTO LCP AFT TRIM
U
W664-225-20 V HDG SEL 28 VDC EXCIT
W664-25-20 W SELF FDBK XDCR HI, PITCH
AFCS ILCA W664-26-20 X SELF FDBK XDCR LO, PITCH
W664-17-20 Y SELF FDBK XDCR 13 VAC HI
W664-24-20 Z SELF FDBK XDCR 13 VAC LO
AFCS CCDA W664-230-20 a CYCLIC MAG BRAKE
W664-268-20 b CLTV CCDA BRAKE SIG HI
AFCS CCDA W664-200-20 c CLTV CCDA BRAKE CLUTCH SIG HI
d
e
AFCS POWER AND CONTROL W664-GD253A20N f CHASSIS GND
W664-12-20 g LAT POSN XDCR HI
AFCS CPT W664-13-20 h LAT POSN XDCR COM
W664-11-20 i LAT POSN XDCR LO
W664-42-20 j SUM FDBK XDCR NO.1 HI, ROLL
AFCS ILCA W664-41-20 k SUM FDBK XDCR LO, ROLL
W664-43-20 m SUM FDBK XDCR NO.2 HI, ROLL
W664-274-20 n 26 VAC HI
AFCS NAVIGATION W664-276-20 p 26 VAC
q
r
AFCS ILCA W664-37-20 s SELF FDBK XDCR HI, ROLL
W664-38-20 t SELF FDBK XDCR LO, ROLL
u
AFCS ILCA W664-33-20 v EH VALVE LO, YAW
W664-23-20 w CLTV MAG BRAKE
x
W664-15-20 y DIR POS XDCR HI
AFCS CPT W664-16-20 z DIR POS XDCR COM
W664-14-20 AA DIR POS XDCR LO
AFCS ILCA W664-31-20 BB SUM FDBK NO1. HI, YAW
CC
DD
EE
W664-36-20 FF SELF FDBK XDCR HI, YAW
W664-32-20 GG SELF FDBK XDCR LO, YAW
W664-34-20 HH EH VALVE HI, YAW
W664-28-20 JJ EH VALVE HI, PITCH
AFCS ILCA W664-35-20 KK SUM FDBK XDCR LO, YAW
W664-30-20 LL SUM FDBK XDCR NO.2 HI, YAW
W664-39-20 MM EH VALVE LO, ROLL
W664-40-20 NN EH VALVE HI, ROLL
W664-27-20 PP EH VALVE LO, PITCH
SOL VALVE
BITE ENABLE
LCP SIGNAL
PWR/SIGNAL RTN CLTV CCDA
CONT SIGNAL HI CLTV CCDA
RIGHT AFT LDG GEAR HI
ROLL DETENT OUT
ROLL DETENT IN
BOX IDENTIFIER
YAW DETENT OUT
YAW DETENT IN
PITCH ATT Y
PITCH ATT X
VERT GYRO VALID
ROLL ERECTION CUTOUT
ROLL ATT Z
ROLL ATT X
ROLL ATT Y
HDG X
HDG Y
HDG Z
DASH OFF ADVISORY
HYD PRESS SW
LEFT AFT LDG GEAR HI
DASH NO.1 XDCR EXC-7 VDC
LDG GEAR SWIVEL LOCK HI
CLTV CCDA XDCR HI
CLTV CCDA XDCR LO
FWD LCP IND HI
HEADING SELECT
BARO ALT SELECT
RADAR ALT SELET
AFCS NO.1 SELECT
SIGNAL RTN
NO.1 HDG ERROR HI
NO.1 HDG ERROR LO
AFCS NO.1 ANNUNCIATOR LIGHT
DASH NO.1 XDCR EXC +7 VDC
DASH NO.1 XDCR SIGNAL
FWD LCP XDCR
FWD LCP IND LO
RADAR ALT SELF TEST CONFIDENCE
SIGNAL GND
RAD ALT SIGNAL HI
ROLL LEFT BEEP
ROLL RIGHT BEEP
DASH MOTOR ARM LO
DASH MOTOR ARM HI
RAD ALT SELF TEST CMD
RAD ALT RELIABILITY
ROLL SYNC OUT
+12 VDC BUFFERED
ROLL SYNC IN
A W664-185-20 AFCS POWER AND CONTROL
B W664-169-20
C W664-160-20 AFCS DASH AND LCP
D W664-155-20 AFCS CCDA
E W664-154-20
F
G W664-215-20 AFCS POWER AND CONTROL
H W664-170-20 AFCS CCDA
J W664-179-20
K W664-144-20 AFCS POWER AND CONTROL
L W664-182-20 AFCS CCDA
M W664-181-20
N W664-240-22 BLU COPILOTS VERTICAL GYRO
P W664-239-22 RED
R W664-249-22
S W664-48-20 AFCS POWER AND CONTROL
T W664-241-22 RED COPILOT'S VERTICAL GYRO
U W664-243-22 YEL
V W664-242-22 BLU
W W664-262-22 RED ASN/43 COMPASS
X W664-263-22 BLU
Y W664-264-22 YEL
Z W664-269-20 AFCS POWER AND CONTROL
a W664-158-20 FLT CONT HYD
b W664-147-20 AFCS POWER AND CONTROL
c W664-161-20 AFCS DASH AND
d W664-150-22 POWER STEERI
e W664-157-20 AFCS CCDA
f W664-156-20
g W664-142-20 AFCS DASH AND LCP
h W664-137-20 AFCS POWER AND CONTROL
i W664-140-20
j W664-139-20
k W664-138-20
m
n
p W664-176-20 AFCS CCDA
q
r
s W664-153-22 HSI (PILOT)
t W664-152-22
u W664-151-20 AFCS POWER AND CONTROL
v W664-162-20 AFCS DASH AND LCP
w W664-163-20
x W664-159-20
y W664-141-20
z W664-259-22 RADAR ALTIMETER
AA W664-257-22
BB W664-256-22
CC
DD
EE
FF W664-168-20 AFCS CCDA
GG W664-167-20
HH W664-165-20 AFCS DASH AND LCP
JJ W664-164-20
KK W664-258-22 RADAR ALTIMETER
LL W664-255-22
MM W664-171-20 AFCS CCDA
NN W664-143-20 AFCS POWER AND CONTROL
PP W664-172-20 AFCS CCDA

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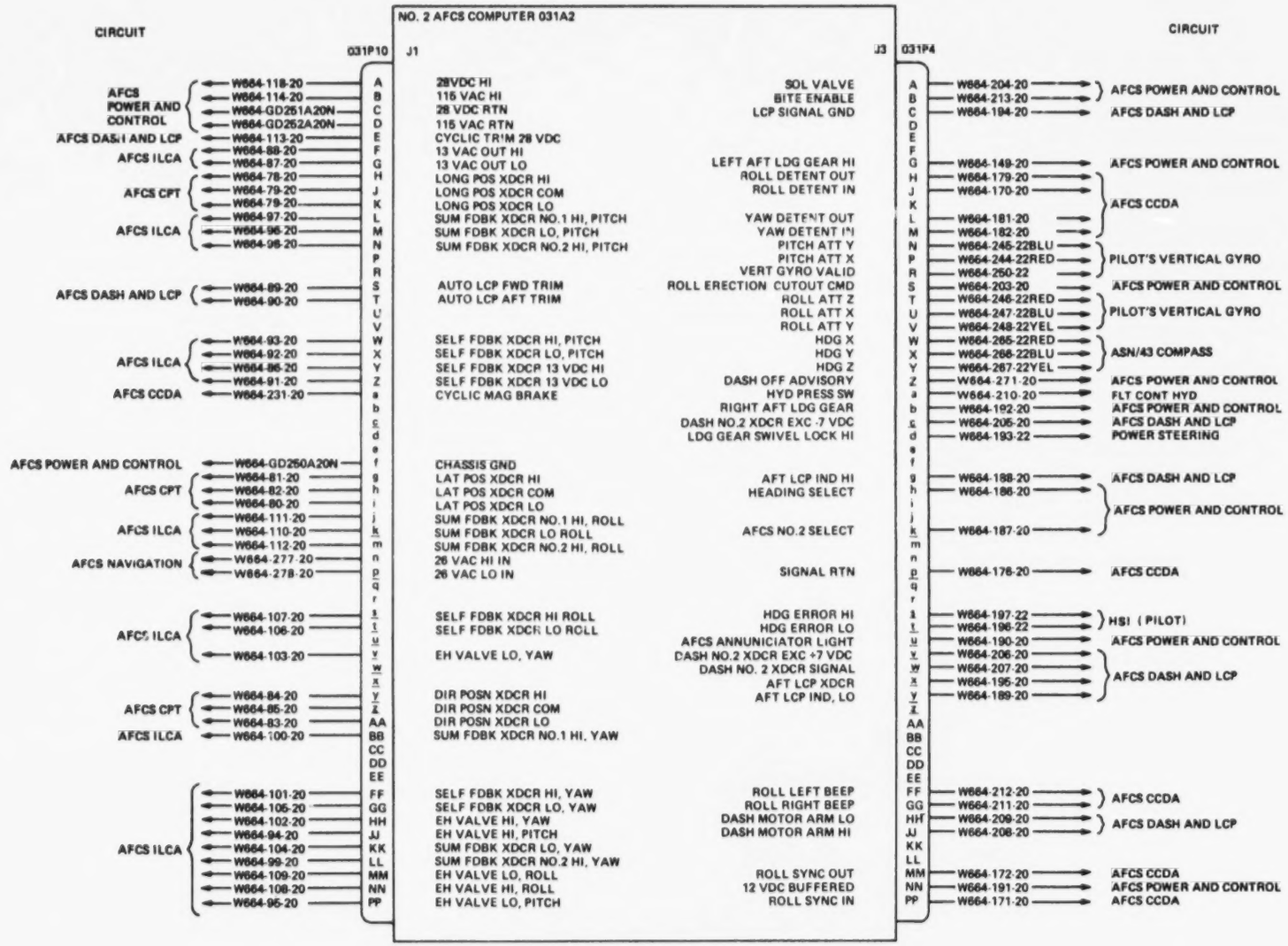
NO 2 AFCS COMPUTER



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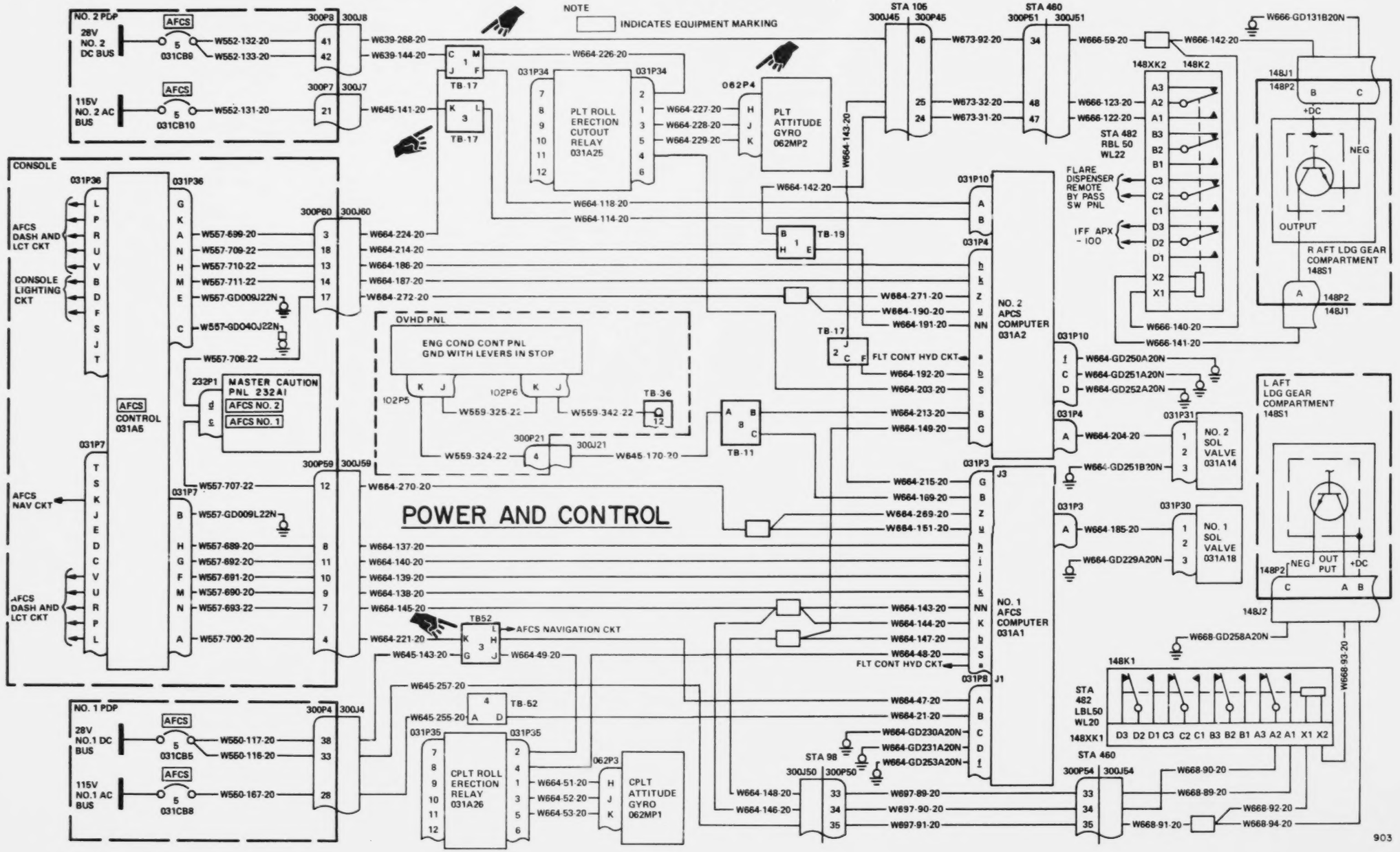
11-3.1.1 AFCS WIRING DIAGRAM (Continued)



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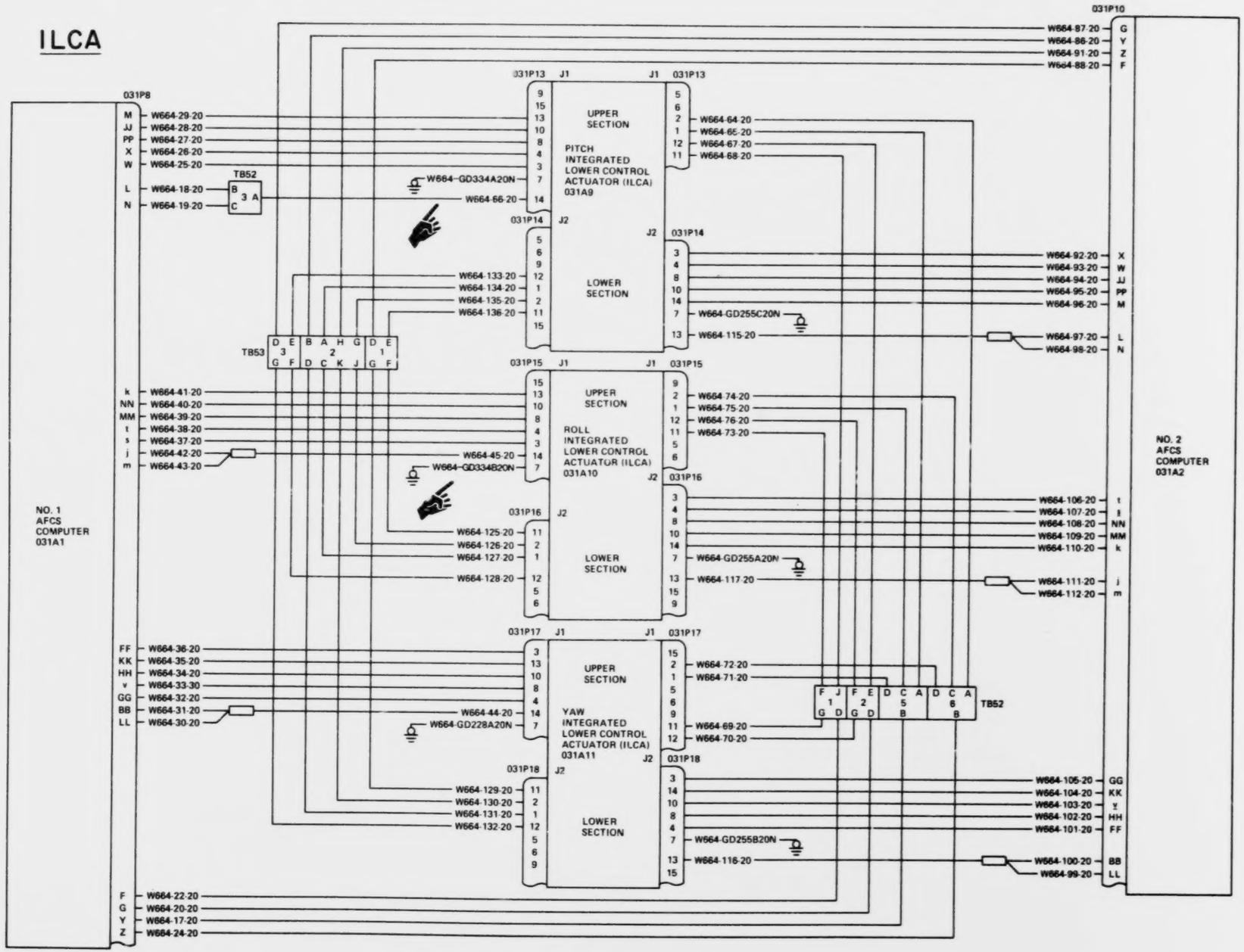

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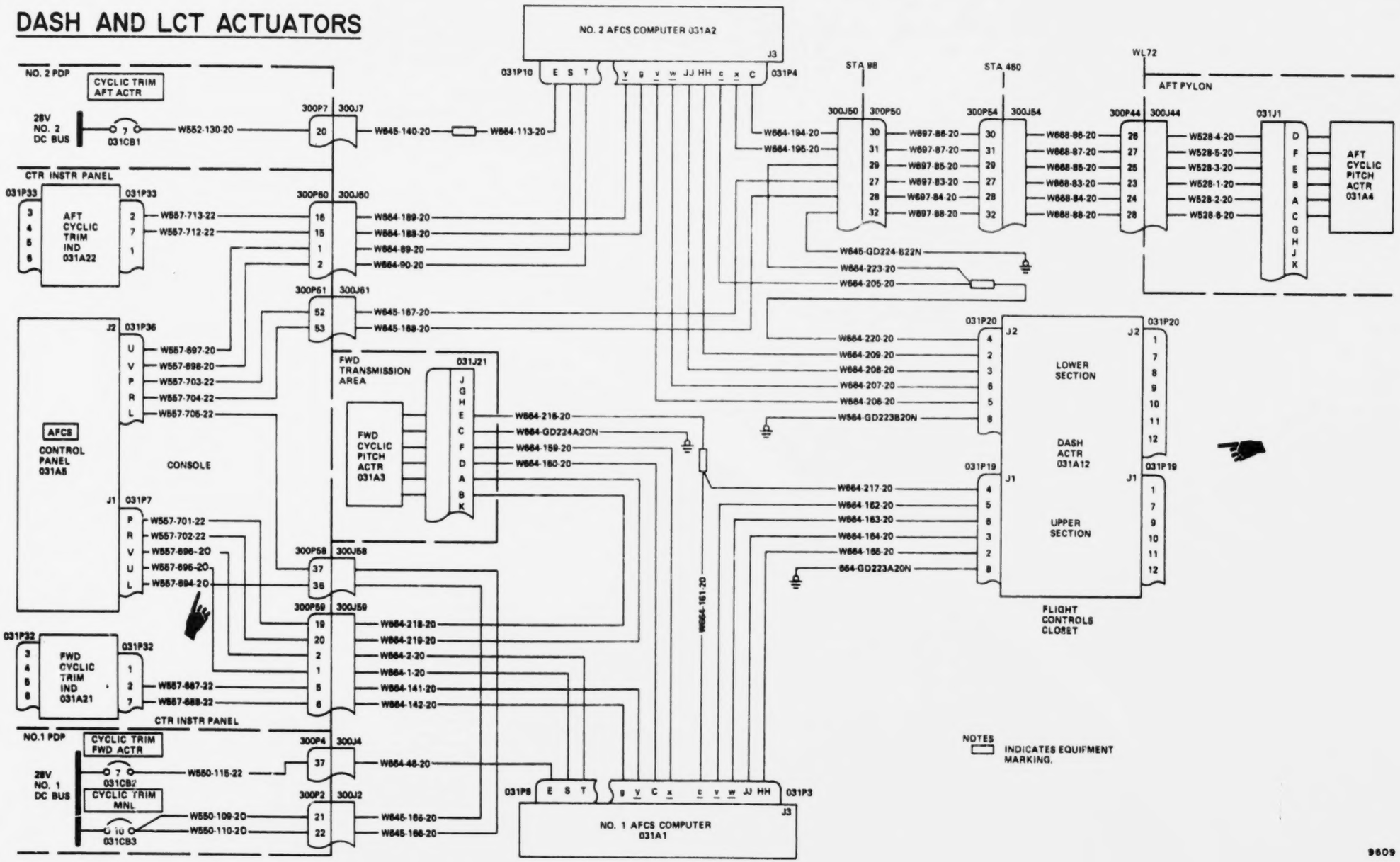

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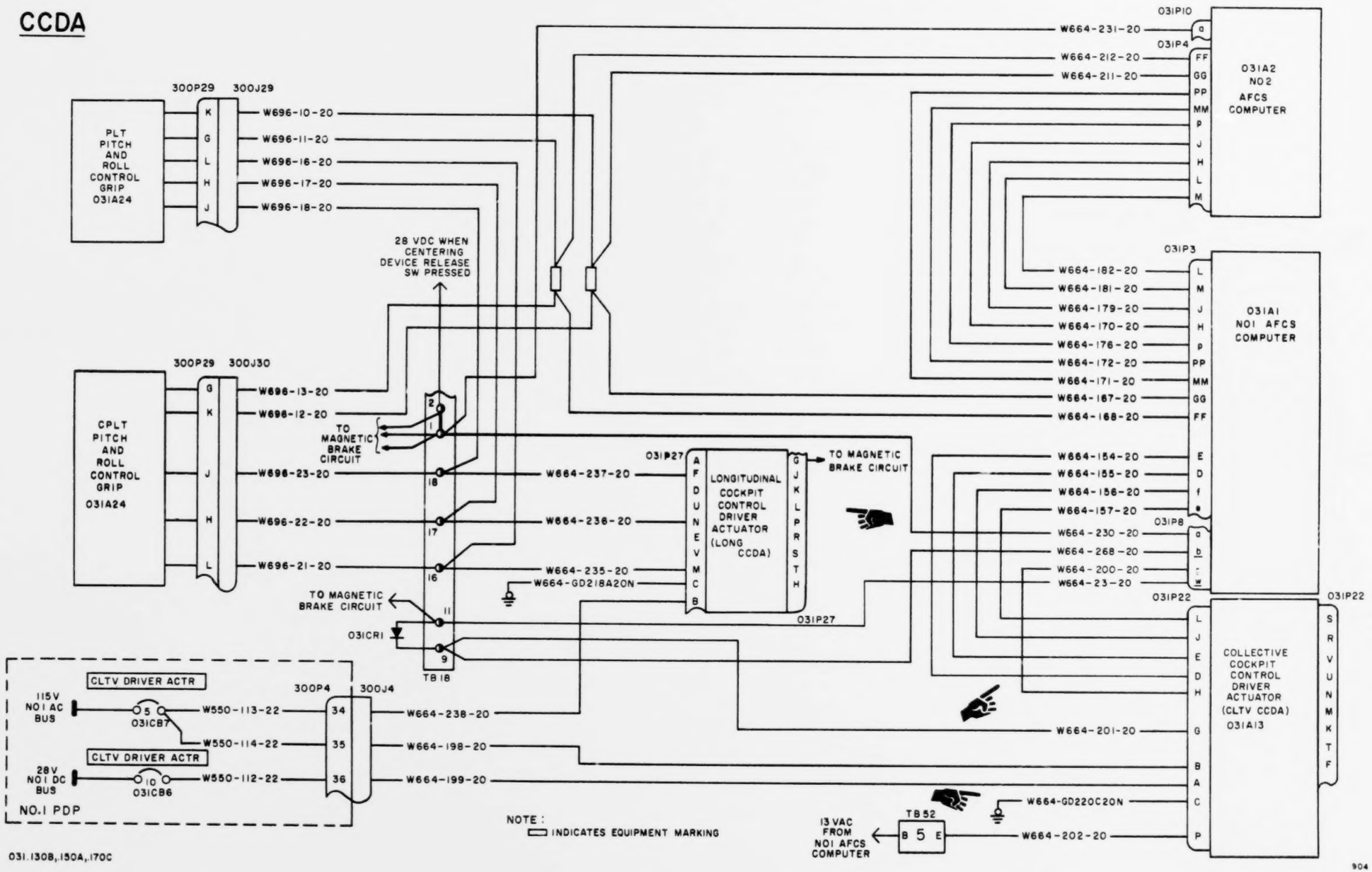

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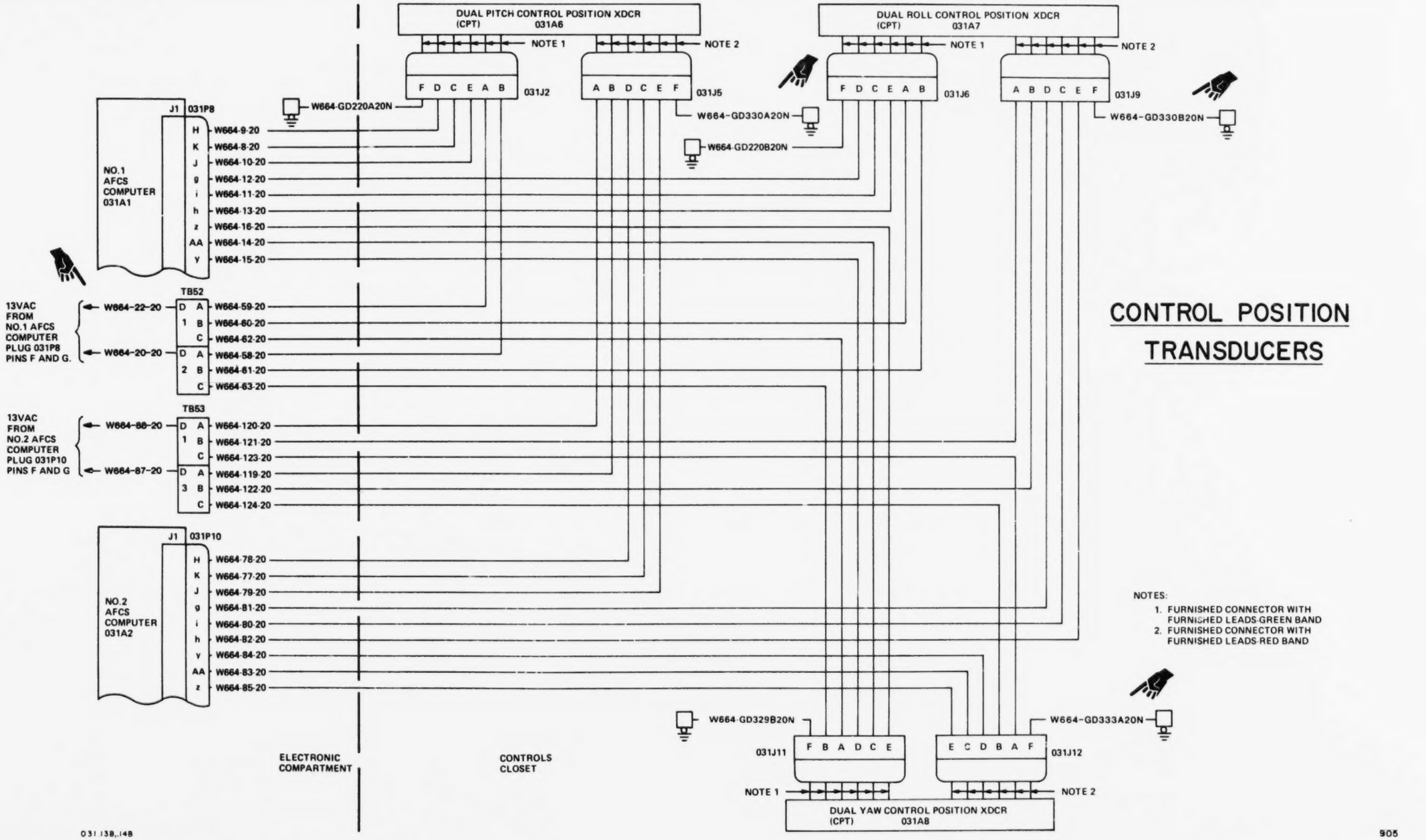

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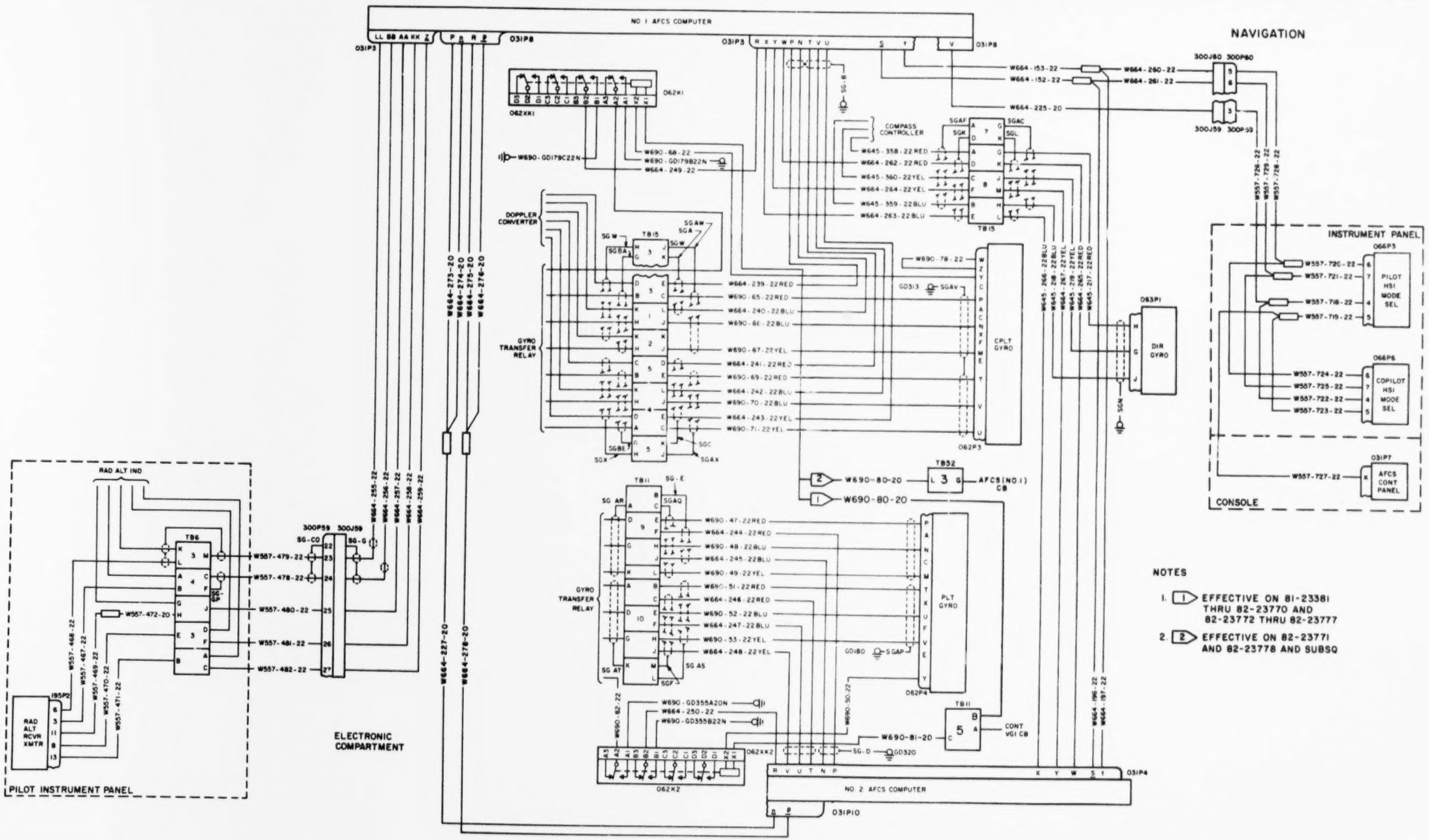

NOTES

1. [1] EFFECTIVE ON 81-23381 THRU 82-23770 AND 82-23772 THRU 82-23777
2. [2] EFFECTIVE ON 82-23771 AND 82-23778 AND SUBSQ

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TST NO.	TEST NAME	MONITOR POINT	OUTPUT	DELAY (SEC)	STIM POINT	STIM LEVEL	REMARKS
0	BITE POS. GO	STIM GEN. OUTPUT	<+4.0	.16	MON. MULTIPLEXER	+3.750	
1	BITE POS. NO-GO	STIM GEN. OUTPUT	>+4.0	.16	MON. MULTIPLEXER	+4.960	
2	BITE NEG. GO	STIM GEN. OUTPUT	>−4.0	.16	MON. MULTIPLEXER	−3.750	
3	BITE NEG. NO-GO	STIM GEN. OUTPUT	>−4.0	20.48	MON. MULTIPLEXER	−4.960	STOP PUSH BITE
4	DERIVED P. RATE	PELA DRIVE	<−6.0	.0025	PITCH ATT. DEMOD	−.547	
5	CONTINUE	SAME	>−6.0	.0025	SAME	SAME	HI-PASS DECAY
6	LCP AIRSPEED	LCP FDBK POT.	<−2.0	.8	T24 LAG AMP	+2.5	
7	DER. P/R MULTP.	PITCH ILCA DRIVE	<−6.0	.16	SIN, Y/R DEMOD	+4.020	
8	CONTINUE	SAME	>−6.0	.8	SAME	+4.020	HI-PASS DECAY
9	LCP AIRSPEED	LCP FDBK POT.	>−2.0	5.12	NONE	NONE	SYNCHRONIZES
10	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	
11	DER. R/R-ROLL	ROLL ILCA DRIVE	>+6.0	.0025	SIN DEMOD	+.940	
12	CONTINUE	R/R LEVEL DET	>+6.0	.0025	SAME	+.940	
13	CONTINUE	8 DEG R. ATT L DET	>+6.0	.0025	SAME	+.940	
14	CONTINUE	ROLL ILCA DRIVE	<+6.0	.16	SAME	+.940	HI-PASS DECAY
15	CONTINUE	R/R LEVEL DET.	<−6.0	.0025	SAME	+.940	
16	CONTINUE	8 DEG R. ATT L DET	<−6.0	.0025	SAME	0	
17	DER R/R-YAW	YAW ILCA DRIVE	<−6.0	5.92	ROLL RATE AMP	−2.150	
18	LCP ALTITUDE	LCP FDBK POT.	<−2.0	.8	T23 LAG AMP	−3.520	
19	DASH PITCH ATT.	DASH SUM. AMP	>+4.0	.16	PITCH ATT. DEMOD	+.117	DASH SW S3 OPEN
20	CONTINUE	SAME	<−4.0	.16	SAME	−.117	DASH SW S3 OPEN
21	DASH AIRSPEED	SAME	>+4.0	.16	T24 LAG AMP	+.39	DASH SW S3 OPEN
22	CONTINUE	V40 LOGIC	>+3.0	.0025	SAME	+.39	DASH SW S3 OPEN
23	CONTINUE	SAME	<−4.0	.0025	NONE	NONE	DASH SW S3 OPEN
24	DASH LGT STICK	DASH SUM AMP	<−4.0	.0025	LGT. STICK DEMOD	+.508	DASH SW S3 OPEN
25	CONTINUE	SAME	>+4.0	.0025	SAME	−.508	DASH SW S3 OPEN
26	BARO ALT. SYNC	CCDA SUM AMP	>−4.0	.64	T23 LAG AMP	−1.52	S9 SYNC
27	BARO ALT. HOLD	SAME	<+4.0	.8	SAME	−1.52	S9 HOLD
28	CONTINUE	SAME	>+4.0	.16	SAME	0	S9 HOLD
29	CCDA RADAR ALT.	SAME	>−4.0	.16	NONE	NONE	S10 SYNC
30	CONTINUE	CCDA SUM AMP	<+4.0	.80	NONE	NONE	S10 HOLD
31	CONTINUE	SAME	<−4.0	.16	RADAR ALT SELFTST	+4.960	S10 HOLD
32	YAW PEDAL POS	YAW ILCA DRIVE	>+6.0	.16	PEDAL CPT DEMOD	+2.030	PED SYNC H. <40
33	CONTINUE	YD LEVEL DET.	>+6.0	.16	SAME	+2.03	PED SYNC H. <40
34	CONTINUE	SAME	<−6.0	.16	SAME	+2.03	PED SYNC-SYNC
35	HEADING	YAW ILCA DRIVE	<+2.8	.16	NONE	NONE	H SYNC-HOLD
36	HEADING SYNC	SAME	<+2.8	.8	HEADING DEMOD	0	H SYNC-SYNC
37	HEADING	SAME	>−4.0	5.3	SAME	0	H SYNC-HOLD
38	CONTINUE	SAME	<−4.0	.16	SAME	−.78	H SYNC-HOLD
39	YAW RATE	YAW ILCA DRIVE	<+6.0	5.12	NONE	NONE	S8 −40 KTS
40	CONTINUE	SAME	<−6.0	.16	YAW RATE DEMOD	−1.679	S8 −40 KTS
41	CONTINUE	SAME	>−6.0	.8	SAME	−1.679	S8 −40 KTS
42	CONTINUE	Y/R LEVEL DET.	>+6.0	.16	SAME	−1.679	S8 −40 KTS
43	CONTINUE	SAME	<−6.0	.16	NONE	NONE	S8 −40 KTS
44	SIDESLIP	YAW ILCA DRIVE	>+6.0	.16	SSLP BUFFER AMP	−.500	S8 −40 KTS
45	ROLL ATTITUDE	ROLL ILCA DRIVE	>+6.0	.16	SIN DEMOD	+.700	S5 HOLD
46	CONTINUE	SAME	<+6.0	.16	SAME	+.700	S5 SYNC
47	CONTINUE	ROLL ATT. ERROR	<−4.0	.16	SAME	+.700	S5 SYNC, S6C
48	HSI HEADING	SAME	<−4.0	.8	NONE	NONE	HSI BIT C, S6C
49	LAT STICK POS.	ROLL ILCA DRIVE	>+6.0	.8	LAT CPT DEMOD	−3.00	LAT STK SYNCH
50	CONTINUE	SAME	<+6.0	.8	SAME	−3.00	LAT STK SYNCH
51	CONTINUE	RD LEVEL DET.	>+6.0	.16	SAME	−3.00	LAT STK SYNCH
52	CONTINUE	SAME	<−6.0	.16	SAME	−3.00	SENSOR TORQUE
53	AUTOMATIC PASS	P/R GYRO TORQUE	>−2.0	.0025	P/R GYRO	26VAC	DROP SENS TQ
54	NORMAL ACCEL	CCDA SUM AMP	<+4.0	5.92	ACCELEROMETER	+12VDC	SENSOR TQUE
55	AUTOMATIC PASS	NONE	<+2.0	.0025	NONE	NONE	SPARE
56	YAW RATE GYRO	Y/R LEVEL DET.	>+6.0	.0025	Y/R GYRO	26VAC	DROP SENS TQ
57	YAW GYRO SMRD	SMRD	>+6.0	.16	NONE (SELF TEST)	NONE	GYRO SMRD OUT
58	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
59	SAME	NONE	>−2.0	.0025	NONE	NONE	SPARE
TO 69	SAME	NONE	>−2.0	.0025	NONE	NONE	SPARE
70	PITCH ILCA	PILCA FDBK DEMOD 1	>+4.0	.16	PILCA SUM AMP	−1.250	ENG SOL VALVE
71	CONTINUE	PILCA FDBK DEMOD 2	>+2.0	.16	SAME	−1.250	ENG SOL VALVE
72	CONTINUE	PILCA FDBK DEMOD 3	>+2.0	.16	SAME	−1.250	ENG SOL VALVE
73	CONTINUE	PILCA FDBK DEMOD 3	<+2.0	.16	NONE	NONE	ENG SOL VALVE
74	CONTINUE	NONE	>−2.0	.0025	NONE	NONE	SPARE
75	YAW ILCA	YILCA FDBK DEMOD 1	>+4.0	.16	PEDAL CPT DEMOD	+2.030	ENG SOL VALVE
76	CONTINUE	YILCA FDBK DEMOD 2	>+2.0	.16	SAME	+2.030	SAME
77	CONTINUE	YILCA FDBK DEMOD 3	>+2.0	.16	SAME	+2.030	SAME
78	SAME	SAME	<+2.0	.16	NONE	NONE	SAME
79	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
80	ROLL ILCA	RILCA FDBK DEMOD 1	>+4.0	.16	RILCA SUM AMP	−1.560	ENG SOL VALVE
81	CONTINUE	RILCA FDBK DEMOD 2	>+4.0	.16	SAME	SAME	SAME
82	CONTINUE	RILCA FDBK DEMOD 3	>+2.0	.16	SAME	−1.56	SAME
83	CONTINUE	SAME	<+2.0	.16	NONE	NONE	SAME
84	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SAME
85	DASH ACTUATOR	DASH FDBK POT	<−3.0	.8	DASH DRIVER AMP	+4.961	DASH S3 OPEN
86	CONTINUE	SAME	>+3.0	.8	SAME	−5.000	SAME
87	CCDA	CCDA LEAD-LAG OUTP.	>+4.0	.8	CCDA MODULATOR	+2.031	AFCS 1, S12, 14 SYNC
88	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
89	LG. STK POS TDCR	LONG. SPT LEVEL DET.	<−3.0	.16	NONE	NONE	
90	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
91	PEDAL POS TDCR	PEDAL POS LEVEL DET	<−3.0	.16	NONE	NONE	
92	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
93	LAT STK POS TDCR	LATERAL CPT L/DET.	<−3.0	.16	NONE	NONE	
94	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
95	RADAR ALTIMETER	RADAR ALT CONF SIG	>+4.0	.16	RADAR ALT SELFTST	+4.960	NO. 1 AFCS ONLY
96	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE
TO 127	AUTOMATIC PASS	NONE	>−2.0	.0025	NONE	NONE	SPARE

END OF TASK

11-3.2 AFCS VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

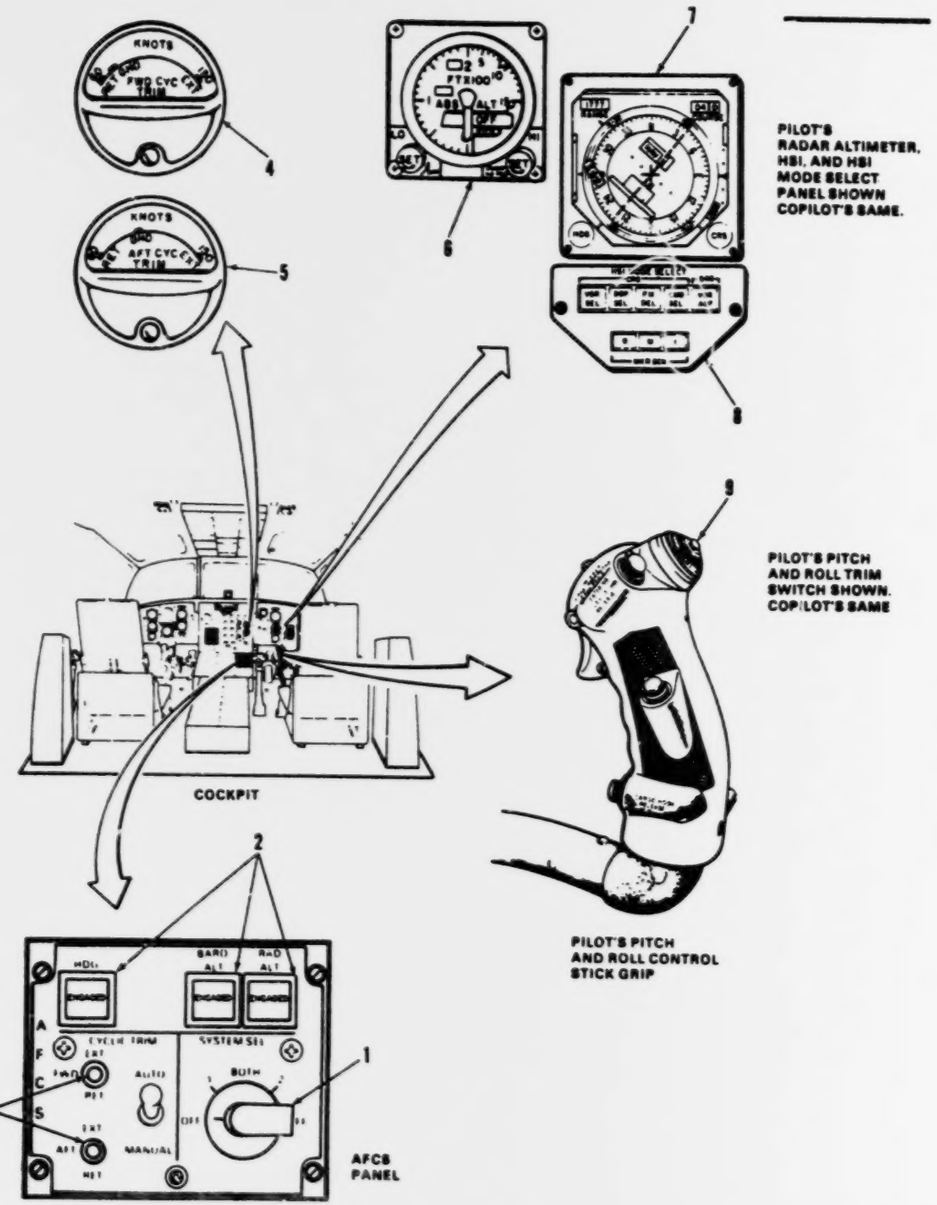
Materials:
None

Personnel Required:
35K10 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Pylon Left Work
Platform Open
Forward Left Work
Platform Open
Flight Controls Closet Acoustic
Blanket Removed
Electronic Compartment Acoustic
Blanket Removed
Flight Controls Closst Panel
Open

TASK	RESULT
1. **Check AFCS panel.**	If knob (1) is loose, tighten it. If any switch (2 or 3) is damaged, replace AFCS panel.
2. **Check FWD and AFT CYC TRIM indicators (4 and 5).**	If either indicator (4 or 5) is damaged, replace it.
3. **Check pilot's radar altimeter (6).**	If altimeter (6) is damaged, replace it.
4. **Check pilot's HSI (7).**	If HSI (7) is damaged, replace it.
5. **Check pilot's HSI MODE SELECT panel (8).**	If panel (8) is damaged, replace it.
6. **Check pilot's pitch and roll trim switch (9).**	If switch (9) is damaged, replace it.
7. Repeat steps 4, 5, and 6 for copilot's radar altimeter HSI, and HSI MODE SELECT panel (6, 7, and 8), then go to step 8.	
8. **Check copilot's pitch and roll trim switch (9).**	If switch (9) is damaged, replace it.



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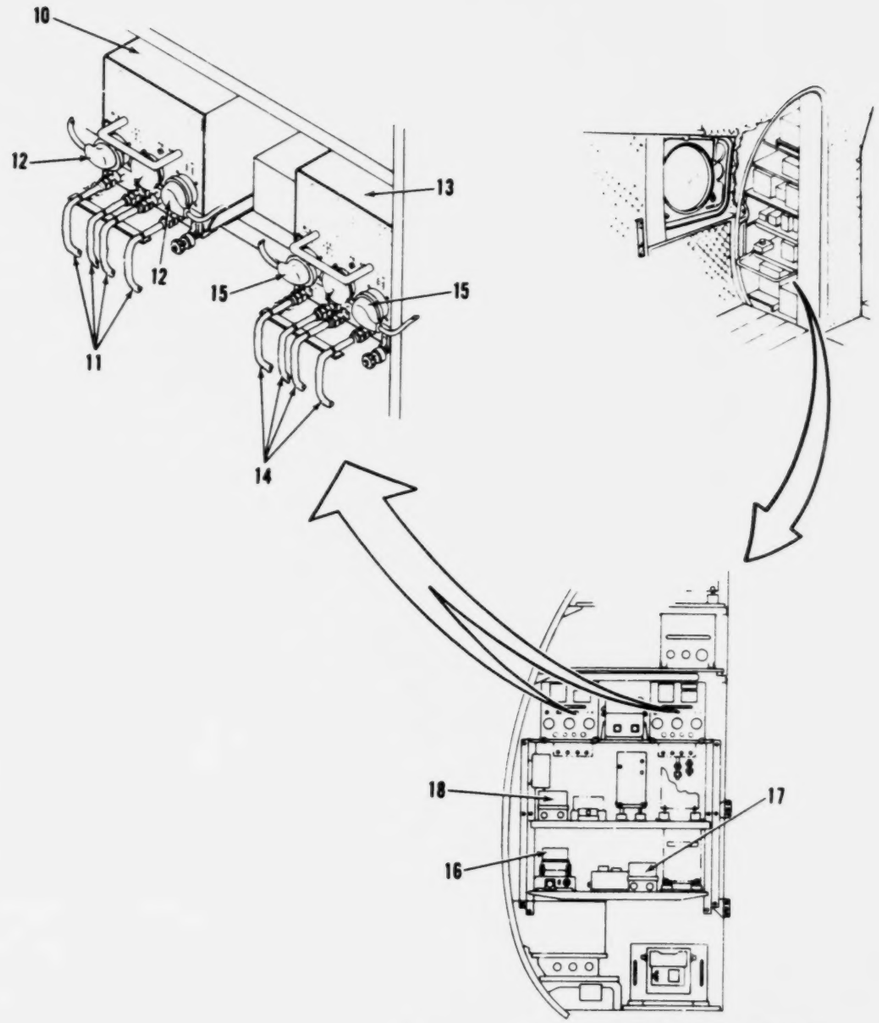
11-3.2 AFCS VISUAL CHECK (Continued)

TASK	RESULT
9. **Check NO. 1 AFCS computer (10).**	If computer (10) is loose or damaged, tighten or replace it as required. If any of four lines (11) are loose or damaged, tighten or replace them as required. If either connector (12) is loose or damaged, tighten or replace it as required. If wiring to either connector (12) is damaged, repair or replace it as required.
10. **Check NO. 2 AFCS computer (13).**	If computer (13) is loose or damaged, tighten or replace it as required. If any of four lines (14) are loose or damaged, tighten or replace them as required. If either connector (15) is loose or damaged, tighten or replace it as required. If wiring to either connector (15) is damaged, repair or replace it as required.
11. **Check directional gyro (16).**	If gyro (16) is damaged, replace it. If connector to gyro is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.
12. **Check pilot's vertical gyro (17).**	If gyro (17) is damaged, replace it. If connector to gyro is loose or damaged, tighten or replace it. If wiring to connector is damaged, repair or replace it as required.
13. **Check copilot's vertical gyro (18).**	If gyro (18) is damaged, replace it. If connector to gyro is loose or damaged, tighten or replace it. If wiring to connector is damaged, repair or replace it as required.



ELECTRONIC COMPARTMENT

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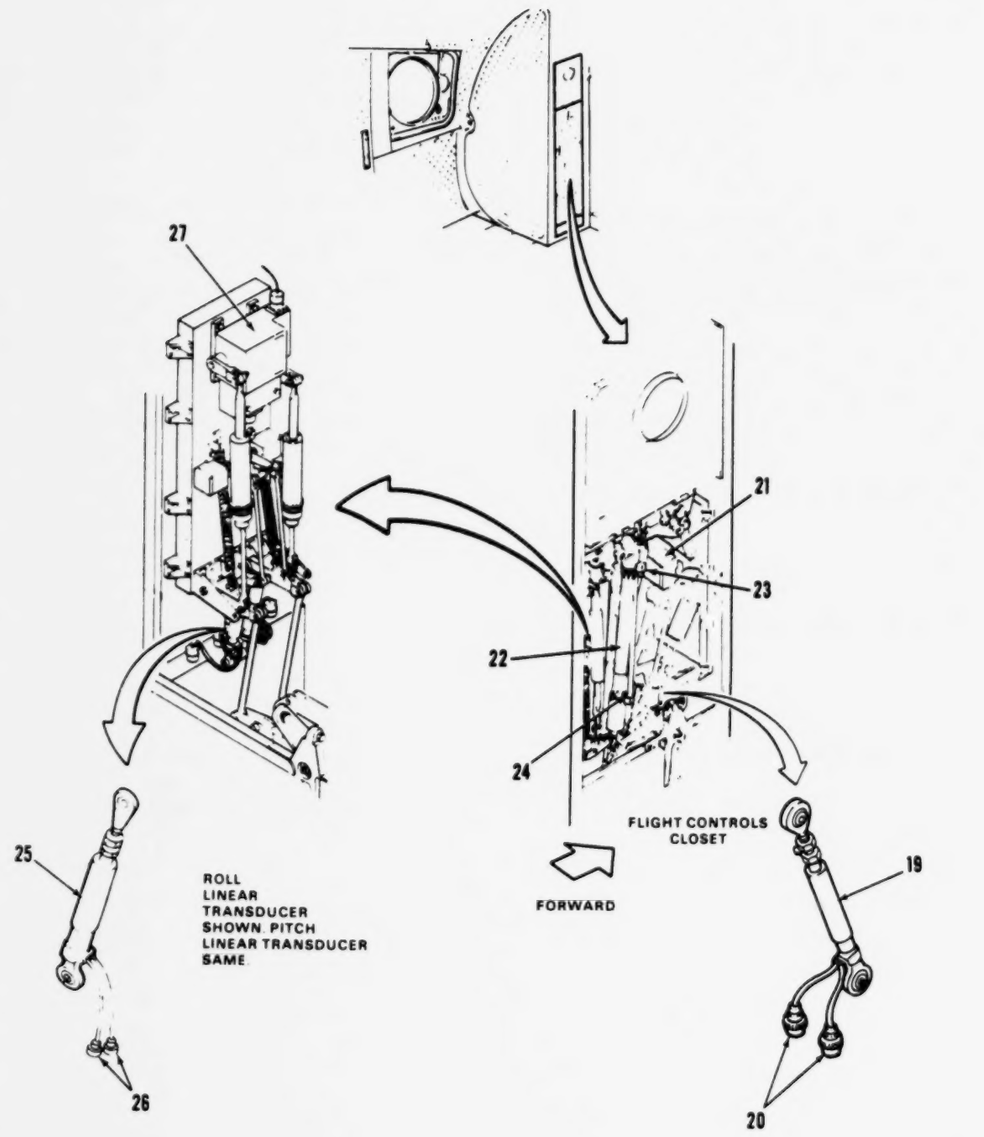
11-3.2 AFCS VISUAL CHECK (Continued)

TASK	RESULT
14. **Check yaw linear transducer (cpt) (19).**	If transducer (19) is damaged, replace it. If either connector (10) is loose or damaged, tighten or replace it. If wiring to either connector is damaged, replace transducer.
15. **Check collective cockpit control driver actuator (ccda) (21).**	If ccda (21) is loose or damaged, tighten or replace it as required. If connector to ccda is loose or damaged, tighten or replace it as required. If wiring to connector is damaged repair or replace it as required.
16. **Check dash actuator (22).**	If actuator (22) is damaged, replace it. If connector (23 or 24) is loose or damaged, tighten or replace it as required. If wiring to either connector is damaged, repair or replace it as required.
17. **Check pitch and roll linear transducers (25).**	If either transducer (25) is damaged, replace it. If any connector (26) is loose or damaged, tighten or replace it as required. If wiring to any connector is damaged, replace transducer.
18. **Check longitudinal ccda (27).**	If ccda (27) is loose or damaged, tighten or replace it as required. If connector to ccda is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.



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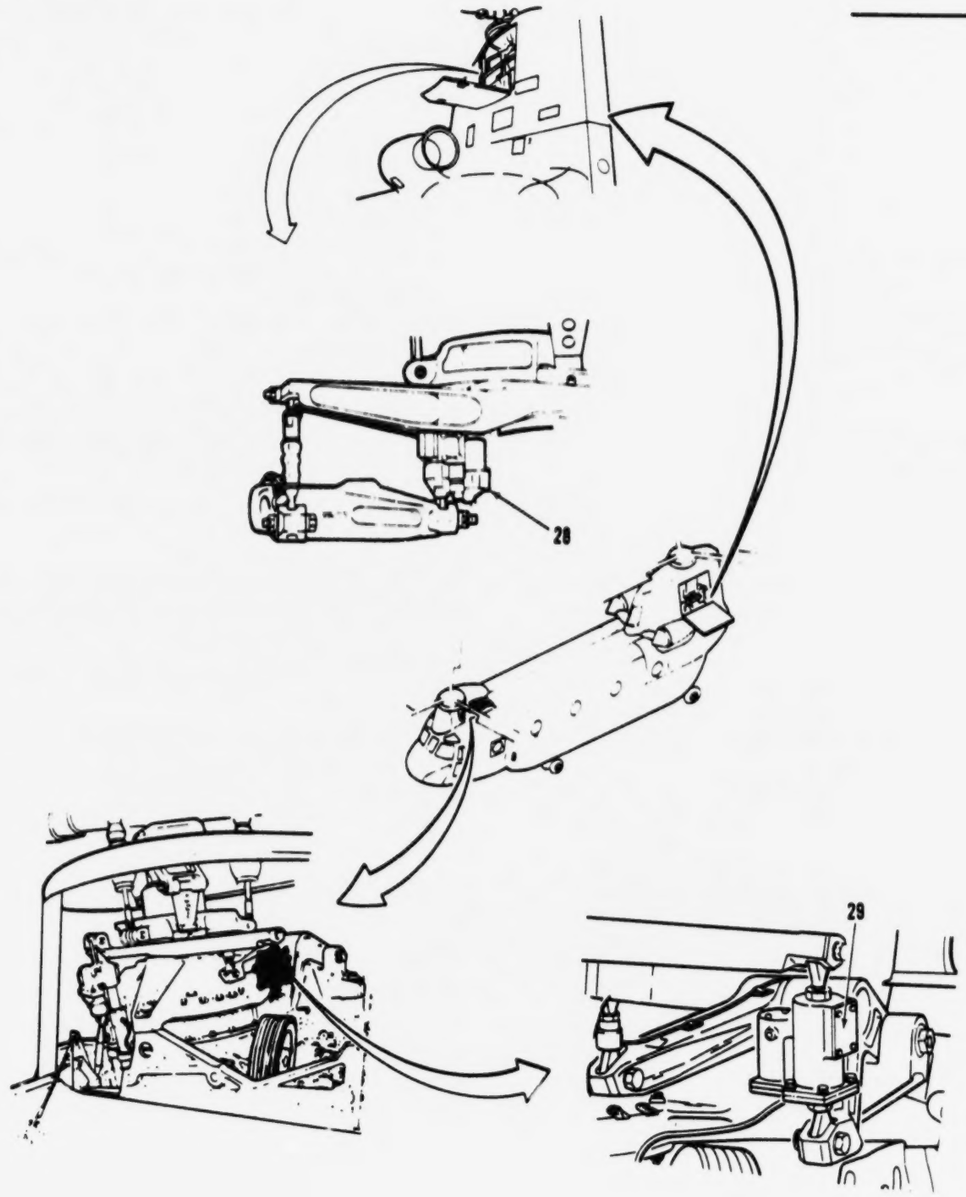
11-3.2 AFCS VISUAL CHECK (Continued)

TASK	RESULT
19 **Check aft longitudinal cyclic trim actuator (28).**	If actuator (28) is damaged, replace it. If connector to actuator is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.
20 **Check forward longitudinal cyclic trim actuator (29).**	If actuator (29) is damaged, replace it. If connector to actuator is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Close Flight Controls Closet Panel
Flight Controls Closet Acoustic Blanket Installed
Forward Left Work Platform Closed
Pylon Left Work Platform Closed



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END OF TASK

11-3.3 AFCS OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

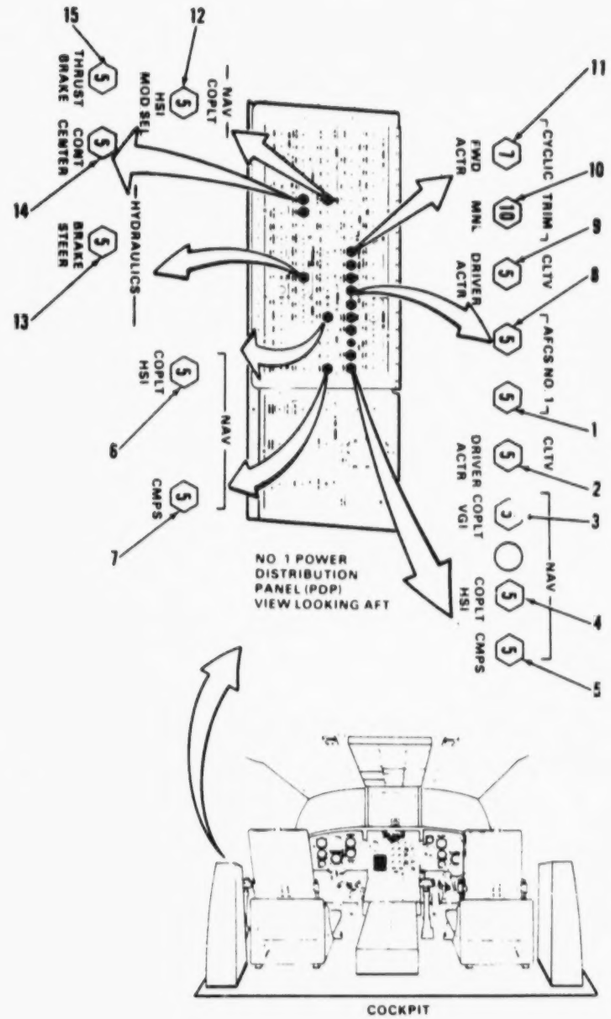
Materials:
None

Personnel Required:
35K20 Avionic Mechanic

References:
TM 11-1520-240-20
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
Aircraft Weight Supported By Its Own Wheels.
Visual Check of AFCS Performed (Task 11-3.2)

TASK	RESULT
CHECK CIRCUIT BREAKERS	
1. **Check** that **following circuit breakers in NO. 1 PDP** are closed: **AC** **AFCS NO. 1 (1)** **CLTV DRIVER ACTR (2)** **NAV COPLT VGI (3)** **NAV COPLT HSI (4)** **NAV CMPS (5)** **NAV COPLT HSI (6)** **NAV CMPS (7)** **DC** **AFCS NO. 1 (8)** **CLTV DRIVER ACTR (9)** **CYCLIC TRIM MNL (10)** and **FWD ACTR (11)** **NAV COPLT HSI** **MODE SEL (12)** **HYDRAULICS BRAKE STEER (13)** **CONT CENTER (14)** **THRUST BRAKE (15)**	If any circuit breaker (1 through 14) is open close it. If AFCS NO. 1 circuit breaker (1) opens again, go to task 11-3.4. If CLTV DRIVER ACTR circuit breaker (2) opens again, go to task 11-3.5. If NAV COPLT VGI, COPLT HSI, CMPS, COPLT HSI, CMPS circuit breaker (3, 4, 5, 6, or 7) open again, refer to TM 11-1520-240-20. If AFCS NO. 1 circuit breaker (8) opens again, go to task 11-3.6. If CLTV DRIVER ACTR circuit breaker (9) opens again, go to task 11-3.7. If CYCLIC TRIM MNL circuit breaker (10) opens again, go to task 11-3.8 If CYCLIC TRIM FWD ACTR circuit breaker (11) opens again, go to task 11-3.9. If NAV COPLT HSI MODE SEL circuit breaker (12) opens again, refer to TM 11-1520-240-20. If BRAKE STEER circuit breaker (13) opens again, go to task 7-4.4. If CONT CENT or THRUST BRAKE circuit breaker (14 or 15) opens again, go to task 11-2.3.



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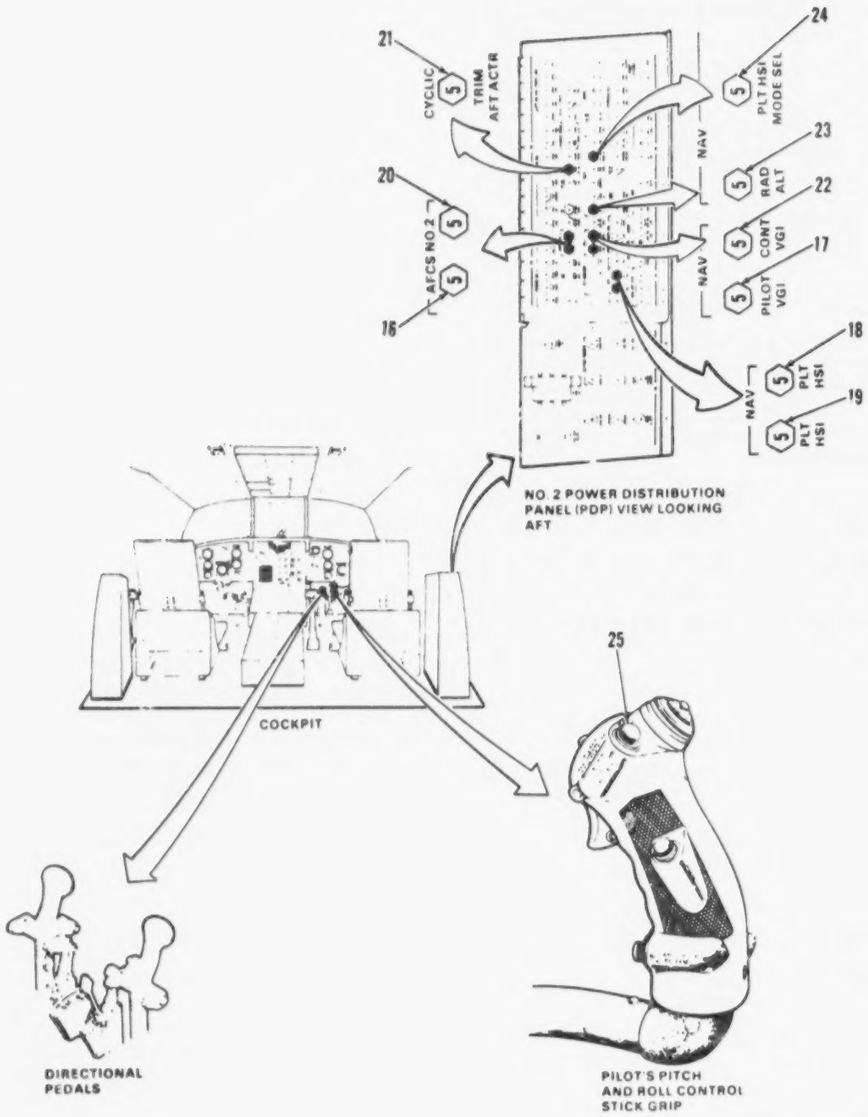
11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT
2 **Check** that **following circuit breakers in NO. 2 PDP** are closed. **AC** **AFCS NO. 2 (16)** **NAV PILOT VGI (17)** **NAV PLT HSI (18)** **NAV PLT HSI (19)** **DC** **AFCS NO. 2 (20)** **CYCLIC TRIM AFT ACTR (21)** **NAV CONT VGI (22)** **NAV RAD ALT (23)** **NAV PLT HSI** **MODE SEL (24)**	If any circuit breaker (16 through 24) is open, close it. If AFCS NO. 2 circuit breaker (16) opens again, go to task 11-3.10. If NAV PILOT VGI, PLT HSI or PLT HSI circuit breaker (17, 18, or 19) opens again, refer to TM 11-1520-240-20 for troubleshooting information. If AFCS NO. 2 circuit breaker (20) opens again, go to task 11-3.11. If CYCLIC TRIM AFT ACTR circuit breaker (21) opens again, go to task 11-3.12. If NAV CONT VGI, RAD ALT, or PLT HSI MODE SEL circuit breaker (22, 23, or 24) opens again, refer to TM 11-1520-240-20 for troubleshooting information.
CHECK NO. 1 AFCS	
3 **Press and hold pilot's CENTERING DEVICE RELEASE switch (25). Center pilot's pitch, roll control stick, and directional pedals. Release CENTERING DEVICE RELEASE switch.**	Control stick and directional pedals shall center easily and remain there after CENTERING DEVICE RELEASE switch (25) is released. If not, go to task 11-2.3.



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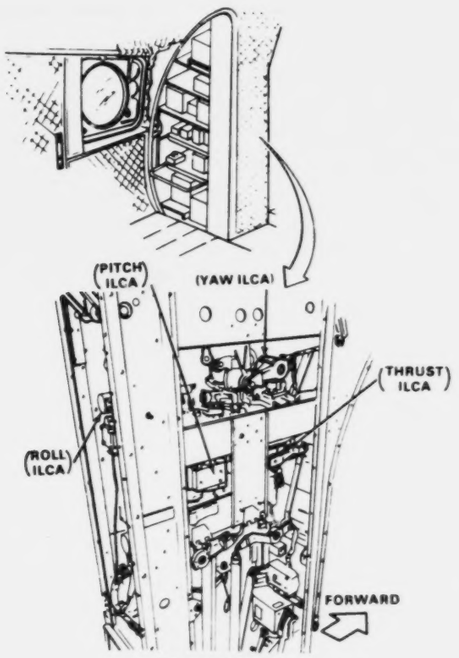
11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT
4. **Set SYSTEM SEL switch (26) to OFF.**	NO. 1 AFCS OFF and NO. 2 AFCS OFF capsules (27 and 28) shall come on. If NO. 1 AFCS OFF capsule (27) is out, go to task 11-3.13. If NO. 2 AFCS OFF capsule (28) is out, go to task 11-3.14.
5. **Set SWIVEL switch (29) to LOCK.**	
6. **Turn pilot's radar altimeter LO SET knob (30) until lo set index (31) is at 100.**	Radar altimeter OFF flag shall go out of view. Digital readout shall indicate 0 to 5 feet after 1 minute warmup. If OFF flag is still in view or digital indication is not 0 to 5 feet, refer to TM 11-1520-240-20 for troubleshooting information.
7. **Turn pilot's HSI HDG knob (32) until heading cursor (33) is 30° degrees clockwise from aircraft heading.**	
8. **Press and release pilot's CMD SEL switch (34).**	CMD SEL caption shall come on. If it does not refer to TM 11-1520-240-20.
9. **Check** that **both ENGINE CONDITION levers (35 and 36)** are at STOP.	Set them to STOP if required.
10. **Check** that **CYCLIC TRIM AUTO MANUAL switch (37)** is at AUTO.	Set switch to AUTO if required.
11. **Check FWD and AFT CYC TRIM indicators (38 and 39).**	Pointers on both indicators (38 and 39) shall be in GND position. If both pointers are not in GND position, go to task 11-3.15. If FWD CYC TRIM indicator pointer is not at GND position, go to task 11-3.16. If AFT CYC TRIM indicator pointer is not at GND position, go to task 11-3.17.
12. **Set SYSTEM SEL switch (26) to 1.**	NO. 1 AFCS OFF capsule (27) shall go out. No large Integrated Lower Control Actuator (ILCA) engagement transients (hardovers) shall occur. If capsule (27) is still on, go to task 11-3.18. If large ILCA engagement transients (hardovers) occurs, go to task 11-3.19 for pitch transient, task 11-3.20 for roll transient, or task 11-3.21 for yaw transient.
13. **Move pilot's directional pedals right, then left. Return pedals to center.**	No. 1 Yaw ILCA output shaft shall extend with pedal right and retract with pedal left. If No. 1 yaw ILCA output shaft does not extend or retract, go to task 11-3.22.
14. **Move pilot's pitch and roll control stick right, then left. Return grip to center.**	No. 1 roll ILCA output shaft shall extend with stick right and retract with stick left. If No. 1 roll ILCA output shaft does not extend or retract, go to task 11-3.23.
15. **Momentarily set pilot's pitch and roll trim switch (40) right then left.** Release switch.	No. 1 roll ILCA output shaft shall extend when switch (40) is right and retract when switch is left. If No. 1 roll ILCA output shaft does not extend or retract, go to task 11-3.24.
15.1 **Momentarily set co-pilot's pitch and roll trim switch (40) right then left.** Release switch.	No. 1 roll ILCA output shaft shall extend when switch (40) is right and retract when switch is left. If No. 1 roll ILCA output shaft does not extend or retract, go to task 11-3.24.
16. **Press and hold pilot's CENTERING DEVICE RELEASE switch (25). Center pilot's pitch and roll control stick and directional pedals. Release CENTERING DEVICE RELEASE switch.**	

GO TO NEXT PAGE

11-3.3 AFCS OPERATIONAL CHECK (Continued)



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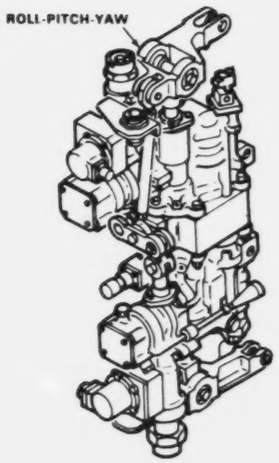
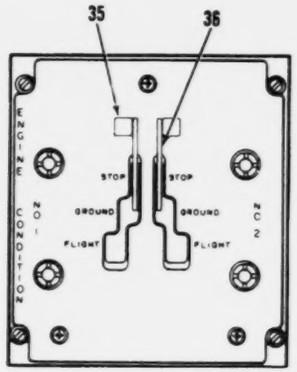
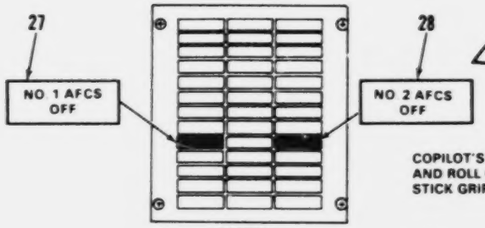
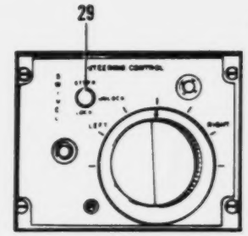


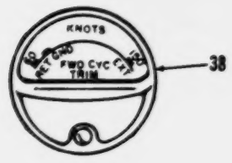


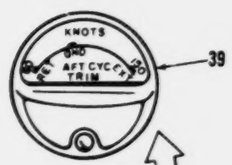


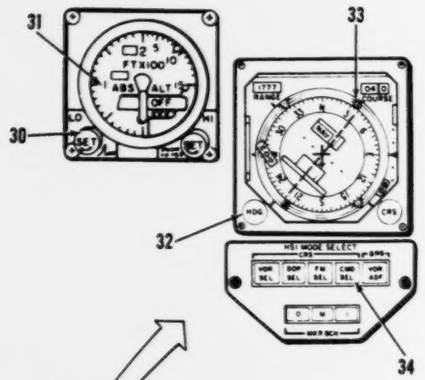
MASTER CAUTION PANEL

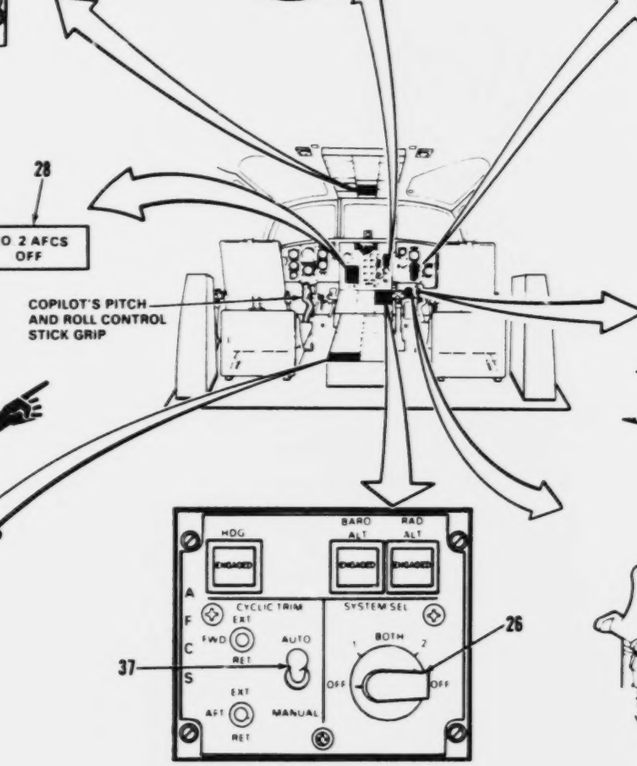


STEERING CONTROL









PILOT'S PITCH AND ROLL CONTROL STICK GRIP SHOWN. COPILOT'S SAME

AFCS PANEL

DIRECTIONAL PEDALS

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11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT
WARNING **Keep head, hands, and other body parts clear of flight controls, especially those in flight controls closet. AFCS BITE automatically causes actuator and controls motion. Severe injury can occur.**	
17. **Set NO. 1 ENGINE CONDITION lever (35) to FLIGHT.**	
18. **Press and release NO. 1 AFCS computer BITE switch (41).**	Computer digital test counter (42) shall remain blank. BITE switch (41) shall not flash. If counter does not remain blank or BITE switch flashes, go to task 11-3.25.
19. **Set NO. 1 ENGINE CONDITION lever (35) to STOP. Set NO. 2 ENGINE CONDITION lever (36) to FLIGHT. Repeat step 18 then go to step 20.**	
20. **Set NO. 2 ENGINE CONDITION lever (36) to STOP.**	
21. **Press and release BITE switch (41).**	Computer counter (42) shall step and display from 1 through 3 and stop at 3. BITE switch (41) shall light and flash while display is stepping and then glow steadily after display indicates 3. If display is blank and BITE switch does not light, go to task 11-3.26. If counter steps to and stops at 3 but BITE switch does not light, replace NO. 1 AFCS computer. If BITE switch lights but display stops at 1 or 2, repeat operational check task 11-3.3. If same result occurs, replace NO. 1 AFCS computer.
22. **Press and release BITE switch (41).**	Computer counter (42) shall step and display from 4 through 95 (end of test) and go blank. BITE switch shall flash while display is stepping. If BITE switch lights steadily, and counter stops at an intermediate number, record that number. Push BITE switch to continue test. Go to table 11-3.1 to determine maintenance action. At end of test, counter shall go blank and BITE switch light shall go out.

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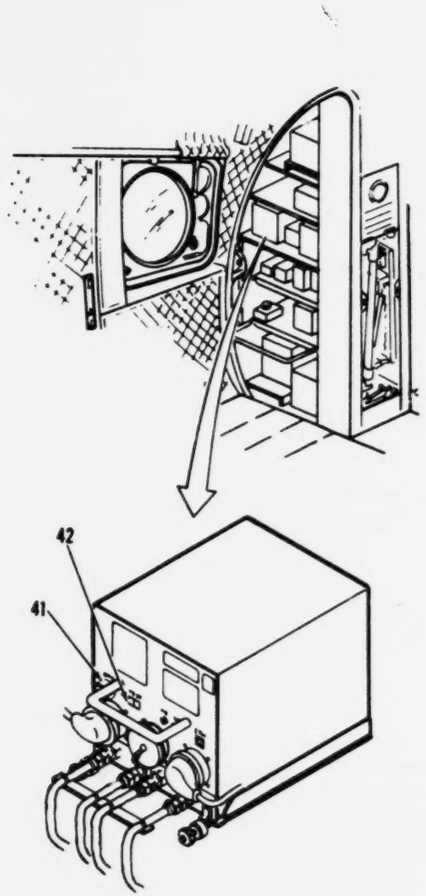
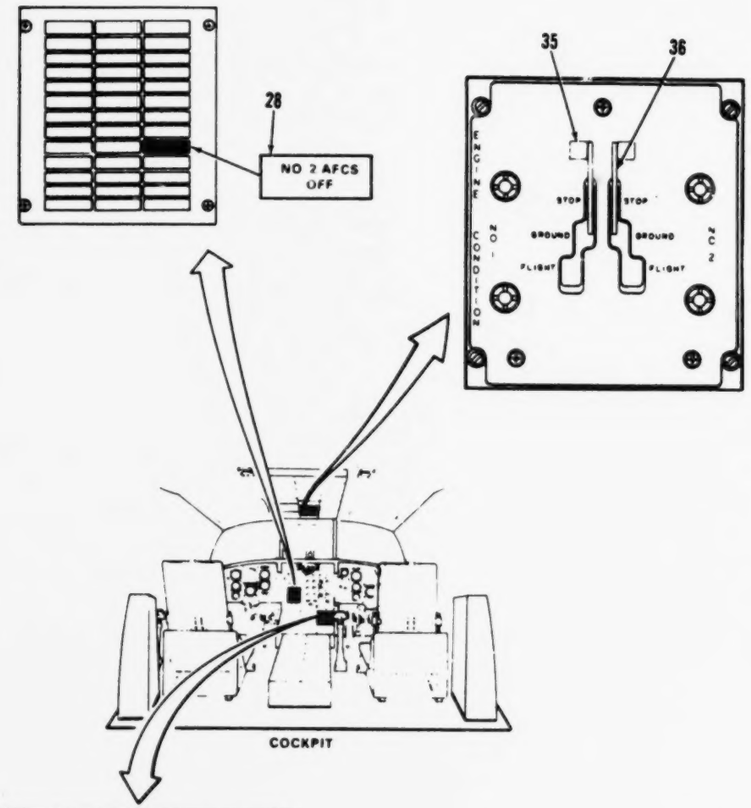
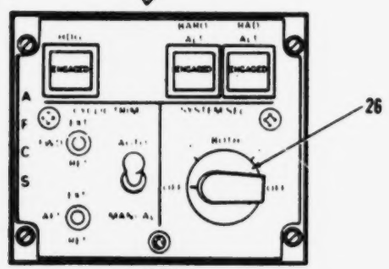
11-3.3 AFCS OPERATIONAL CHECK (Continued)



NO 1 AFCS COMPUTER



COCKPIT



AFCS PANEL

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11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT
CHECK NO. 2 AFCS	
23. **Set SYSTEM SEL switch (26) to BOTH, pause for 10 seconds then set it to OFF through position 2.**	NO. 1 AFCS OFF and NO. 2 AFCS OFF capsules (27 and 28) shall come on. If NO. 1 AFCS OFF capsule (27) is out, go to task 11-3.13. If NO. 2 AFCS OFF capsule (28) is out, go to task 11-3.14.
24. **Set SWIVEL switch (26) to LOCK.**	
25. **Turn pilot's radar altimeter LO SET knob (30) until lo set index (31) is at 100.**	Radar altimeter OFF flag shall go out of view. Digital readout shall indicate 0 to 5 feet after **1 minute** warmup. If OFF flag is still in view or digital indication is not 0 to 5 feet, refer to TM 11-1520-240-20 for troubleshooting information.
26. **Turn pilot's HSI HDG knob (32) until heading cursor (33) is 30° degrees clockwise from aircraft heading.**	
27. **Press and release pilot's CMD SEL switch (34).**	CMD SEL caption shall come on. If it does not, refer to TM 11-1520-240-20.
28. **Check** that **both ENGINE CONDITION levers (35 and 36)** are at STOP.	Set them to STOP if required.
29. **Check** that **CYCLIC TRIM AUTO MANUAL switch (37)** is at AUTO.	Set switch to AUTO if required.
30. **Check FWD and AFT CYC TRIM indicators (38 and 39).**	Pointers on both indicators (38 and 39) shall be in GND position. If both pointers are not in GND position, go to task 11-3.15. If FWD CYC TRIM indicator pointer is not at GND position, go to task 11-3.16. If AFT CYC TRIM indicator pointer is not at GND position, go to task 11-3.17.
31. **Set SYSTEM SEL switch (26) to 2.**	NO. 2 AFCS OFF capsule (28) shall go out. No large Integrated Lower Control Actuator (ILCA) engagement transients (hardovers) shall occur. If capsule (28) is still on, go to task 11-3.27. If large ILCA engagement transients (hardovers) occur, go to task 11-3.28 for pitch transient, task 11-3.29 for roll transient, or task 11-3.30 for yaw transient.
32. **Move pilot's directional pedals right, then left. Return pedals to center.**	No. 2 yaw ILCA output shaft shall extend with pedal right and retract with pedal left. If No. 2 yaw ILCA output shaft does not extend or retract, go to task 11-3.31.
33. **Move pilot's pitch and roll control stick right, then left. Return grip to center.**	No. 2 roll ILCA output shaft shall extend with stick right and retract with stick left. If No. 2 roll ILCA output shaft does not extend or retract, go to task 11-3.32.
34. **Momentarily set pilot's pitch and roll trim switch (40) right then left.** Release switch.	No. 2 roll ILCA output shaft shall extend when switch (40) is right and retract when switch is left. If No. 2 roll ILCA output shaft does not extend or retract, go to task 11-3.33.
34.1 **Momentarily set copilot's pitch and roll trim switch (40) right then left.** Release switch.	No. 2 roll ILCA output shaft shall extend when switch (40) is right and retract when switch is left. If No. 2 roll ILCA output shaft does not extend or retract, go to task 11-3.33.
35. **Press and hold pilot's CENTERING DEVICE RELEASE switch (25). Center pilot's pitch and roll control stick and directional pedals. Release CENTERING DEVICE RELEASE switch.**	

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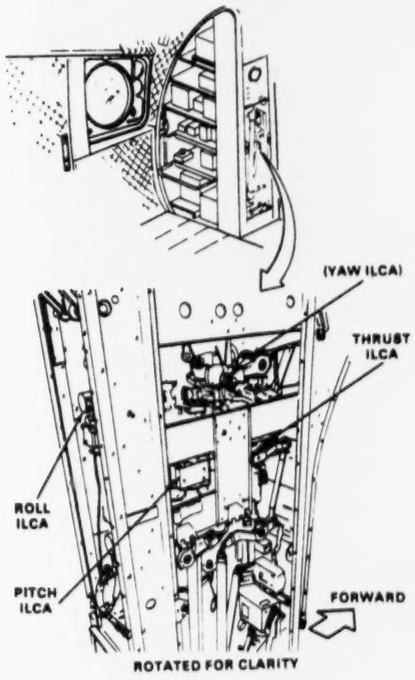
11-3.3 AFCS OPERATIONAL CHECK (Continued)



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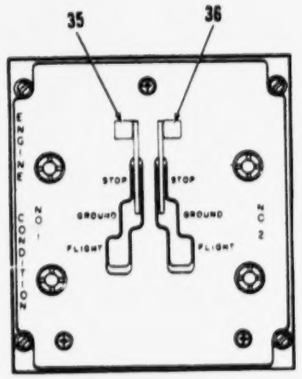
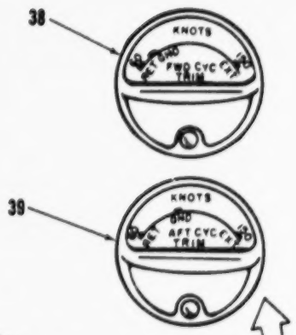
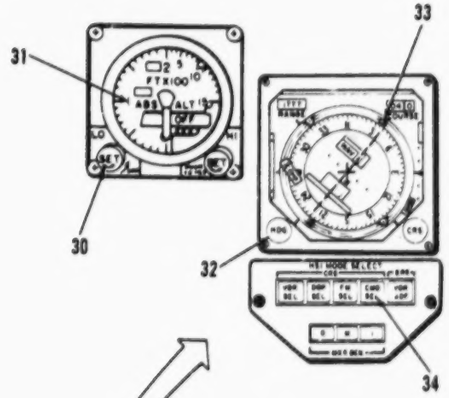
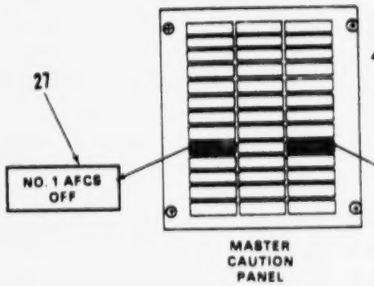


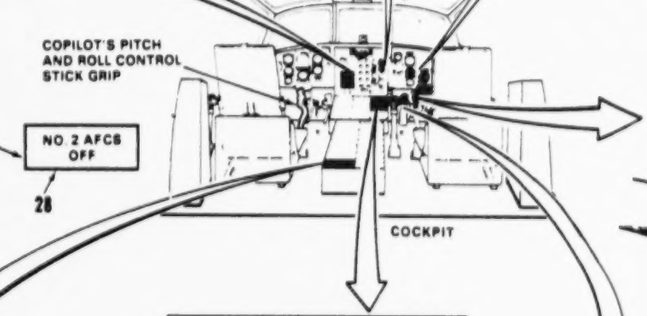




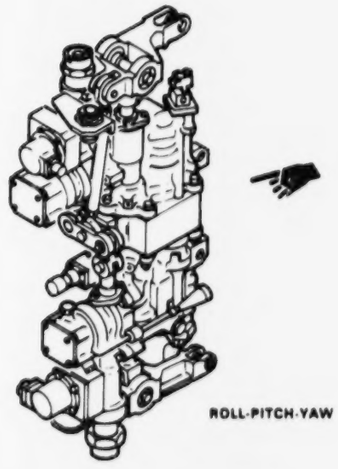
PILOT'S PITCH AND ROLL CONTROL STICK GRIP SHOWN. COPILOT'S SAME

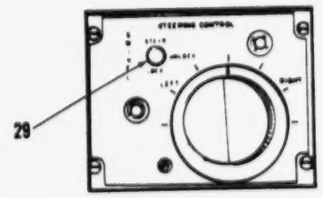


MASTER CAUTION PANEL

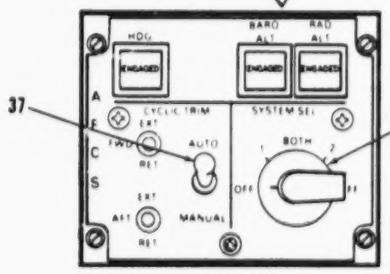


COCKPIT


ROLL-PITCH-YAW



STEERING CONTROL



AFCS PANEL

DIRECTIONAL PEDALS

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11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT
WARNING **Keep head, hands, and other body parts clear of flight controls, especially those in flight controls closet. AFCS BITE automatically causes actuator and controls motion. Severe injury can occur.**	
36. **Set NO. 1 ENGINE CONDITION lever (35) to FLIGHT.**	
37. **Press and release NO. 2 AFCS computer BITE switch (43).**	Computer digital test counter (44) shall remain blank. BITE switch (43) shall not flash. If counter does not remain blank or BITE switch flashes, go to task 11-3.25.
38. **Set NO. 1 ENGINE CONDITION lever (35) to STOP. Set NO. 2 ENGINE CONDITION lever (36) to FLIGHT. Repeat step 37 then go to step 39.**	
39. **Set NO. 2 ENGINE CONDITION lever (36) to STOP.**	
40. **Press and release BITE switch (43).**	Computer counter (44) shall step and display from 1 through 3 and stop at 3. BITE switch (41) shall light and flash while display is stopping and then glow steadily after display indicates 3. If display is blank and BITE switch does not light, go to task 11-3.34. If counter steps to and stops at 3 but BITE switch does not light, replace NO. 2 AFCS computer. If BITE switch lights but display stops at 1 or 2, repeat operational check task 11-3.2. If same result occurs, replace NO. 2 AFCS computer.
41. **Press and release BITE switch (43).**	Computer counter (44) shall step and display from 4 through 95 (end of test) and go blank. BITE switch shall flash while display is stepping. If BITE switch lights steadily, and counter stops at an intermediate number, record that number. Push BITE switch to continue test. Go to table 11-3.1 to determine maintenance action. At end of test, counter shall go blank and BITE switch light shall go out.

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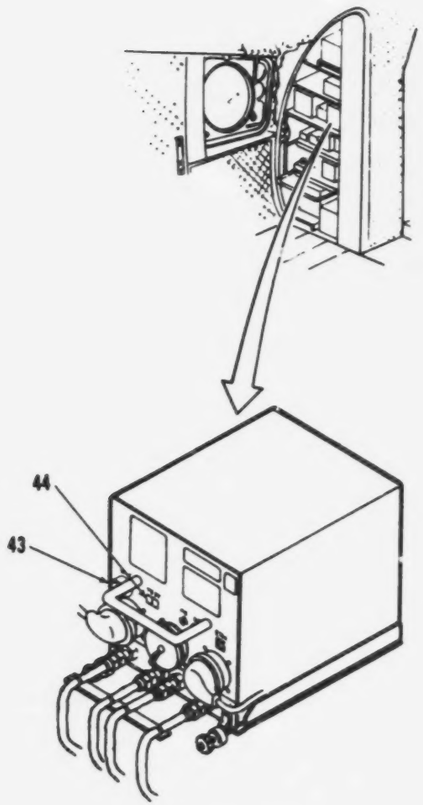
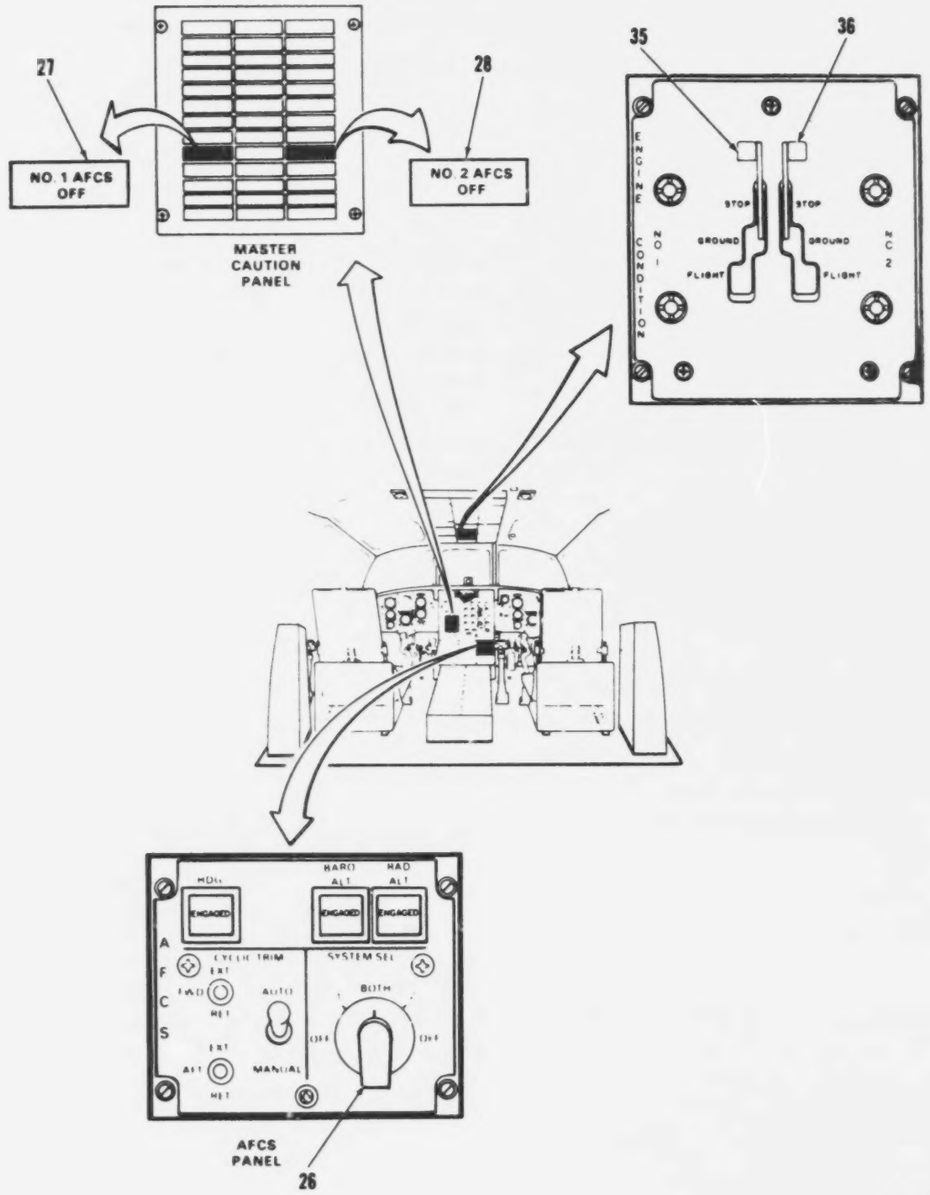
11-3.3 AFCS OPERATIONAL CHECK (Continued)



NO. 2 AFCS COMPUTER



AFCS PANEL

11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT
CHECK LONGITUDINAL CYCLIC TRIM ACTUATOR CONTROL	
42. **Set CYCLIC TRIM AUTO MANUAL switch (37) to MANUAL.**	
43. **Set and hold FWD switch (45) to EXT.**	FWD CYC TRIM indicator (38) pointer shall move from GND to EXT position. If it does not, go to task 11-3.35.
44. **Set and hold FWD switch (45) to RET.**	FWD CYC TRIM indicator (38) pointer shall move from EXT to RET position. If it does not, go to task 11-3.35.
45. **Release FWD switch (45). Set and hold AFT switch (46) to EXT.**	AFT CYC TRIM indicator (39) pointer shall move from GND to EXT position. If it does not, go to task 11-3.36.
46. **Set and hold AFT switch (46) to RET.**	AFT CYC TRIM indicator (39) pointer shall move from EXT to RET position. If it does not, go to task 11-3.36.
47. **Release AFT switch (46).**	
48. **Set CYCLIC TRIM AUTO MANUAL switch (37) to AUTO.**	Pointers on FWD and AFT CYC TRIM indicators (38 and 39) shall move to GND positions.
CHECK HDG, RAD ALT, AND BARO ALT SWITCHES	
49. Check that SYSTEM SEL switch (26) is at BOTH.	If not, set it to BOTH.
50. **Press and hold HDG switch (47).**	HDG switch (47) ENGAGED caption shall come on. If not, go to task 11-3-37.
51. **Release HDG switch (47).**	
52. **Press and release RAD ALT switch (48).**	RAD ALT switch (48) ENGAGED caption shall come on and stay on. If not, go to task 11-3.38.
53. **Press and release BARO ALT switch (49).**	RAD ALT switch (48) ENGAGED caption shall go out. BARO ALT switch (49) ENGAGED caption shall come on. If not, go to task 11-3.38.
54. Set SYSTEM SEL switch to **position 1, then to OFF.**	BARO ALT switch (49) ENGAGED caption shall go out. If not, replace AFCS control panel.
CHECK LONGITUDINAL COCKPIT CONTROL DRIVER ACTUATOR	
55. **Set and hold pilot's pitch and roll trim switch (40) forward.**	Pitch and roll control sticks shall move forward. If not, go to task 11-3-39.
56. **Set and hold pilot's pitch and roll trim switch (40) aft.**	Pitch and roll control sticks shall move aft. If not, go to task 11-3.39.
57. Repeat steps 55 and 56 using copilot's pitch and roll trim switch (40).	

NOTE

If a problem with AFCS occurred during flight and could not be verified by the AFCS operational check, refer to table 11-3.2 to locate trouble symptom task number.

TABLE 11-3.1

BITE TEST NUMBER	TASK NO. OR MAINTENANCE ACTION
4, 5, 7, 8, 10-17, 19-47, 49-69	Replace computer
75-84, 88, 90-94, 96-127	
6, 9, 18	11-3.40
48	11-3.41
70-74	11-3.42
85, 86	11-3.43 or 11-3.44
87	11-3.45
89	11-3.46 or 11-3.47
95	11-3.48

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11-3.3 AFCS OPERATIONAL CHECK (Continued)

TASK	RESULT

TABLE 11-3.2

TROUBLE SYMPTOM	Task Number NO. 1 AFCS	NO. 2 AFCS
Longitudinal Axis:		
AFCS Pitch Stabilization Erratic or Oscillatory	11-3.49	11-3.49
AFCS Pitch Attitude/Airspeed Hold Weak or Inoperative	11-3.50	11-3.51
AFCS Longitudinal Control Position Out of Trim	11-3.52	11-3.52
Lateral Axis:		
AFCS Roll Stabilization Erratic/Oscillatory or Roll Atitude Hold Weak or Inoperative	11-3.53	11-3.53
Heading Select Mode Response Weak or Inoperative (Both Systems)	11-3.54	11-3.54
AFCS Heading Select Mode Response Weak or Inoperative	11-3.55	11-3.56
Directional Axis:		
YAW Stability Erratic/Oscillatory	11-3.57	11-3.58
AFCS Heading Hold Weak or Inoperative	11-3.59	11-3.59
AFCS Lateral Stick Only Turns Not Coordinated	11-3.60	11-3.60
Collective Axis:		
Barometric Altitude Hold Inoperative or Response Erratic (Radar Altitude Hold Okay)	11-3.61	
Radar Altitude Hold Inoperative or Response Erratic (Barometric Altitude Hold Okay)	11-3.62	
Barometric and Radar Altitude Hold Inoperative or Response Erratic	11-3.63	

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
- Hydraulic Power Off
- Electrical Power Off
- Battery Disconnected
- Flight Controls Closet Acoustic Blanket Installed.
- Electronic Compartment Acoustic Blanket Installed
- Pylon Left Work Platform Closed.
- Forward Left Work Platform Closed.

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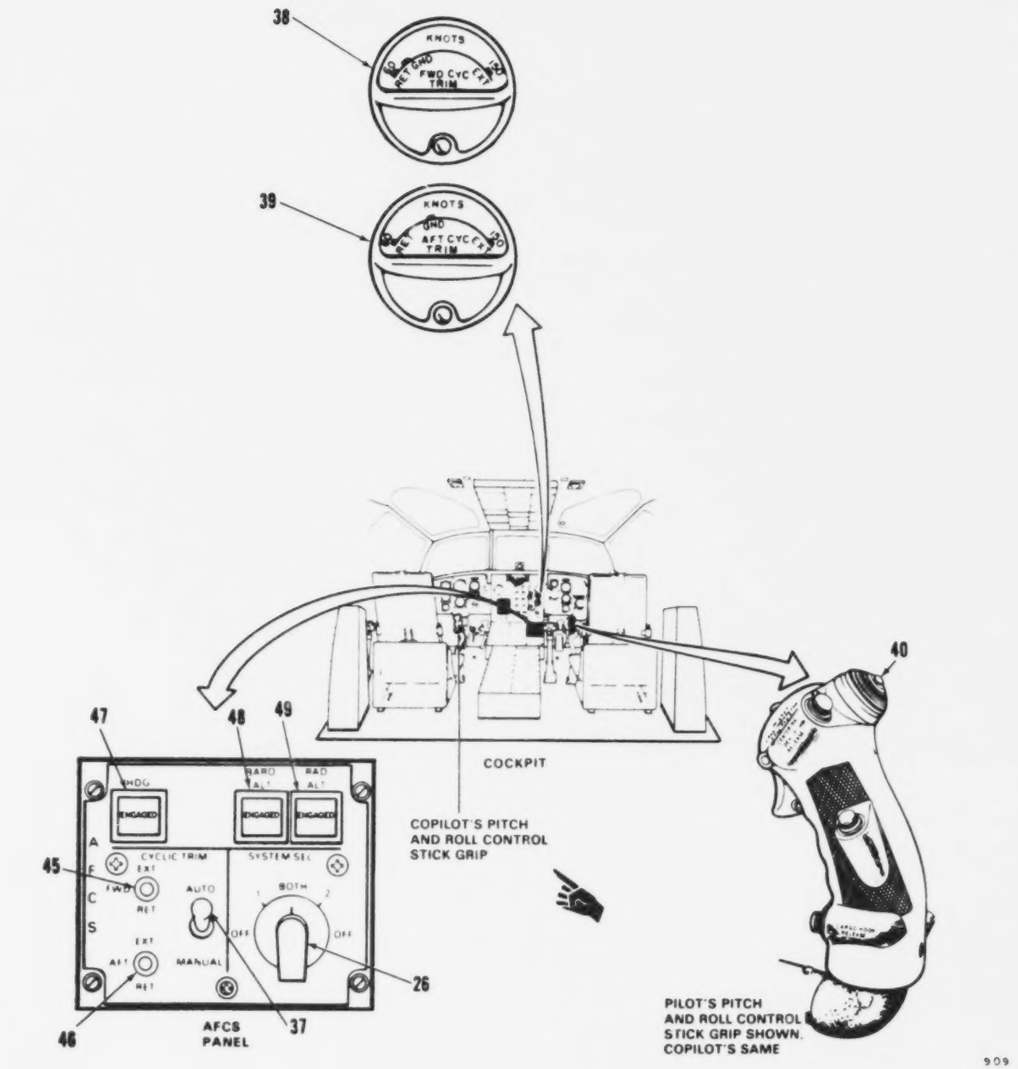

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END OF TASK

11-3.4 NO. 1 AFCS AC CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

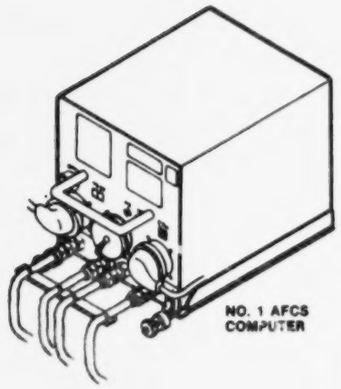
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

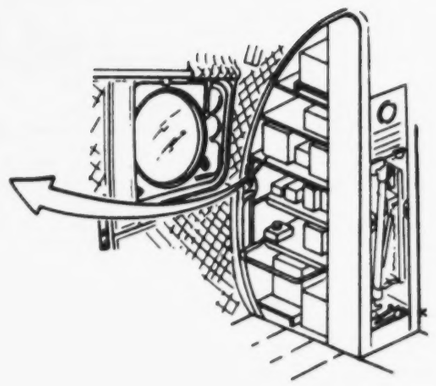
Materials:
None

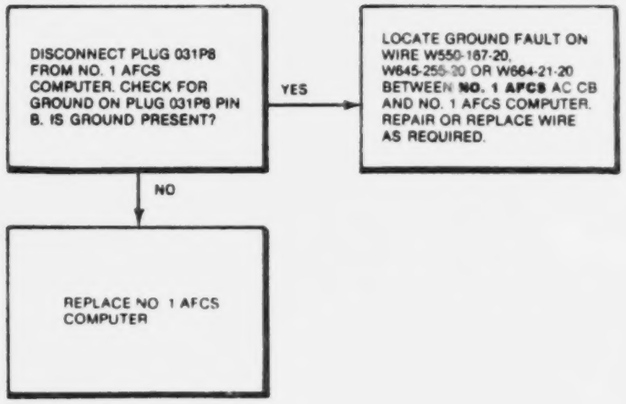
Personnel Required:
35K20 Avionic Mechanic

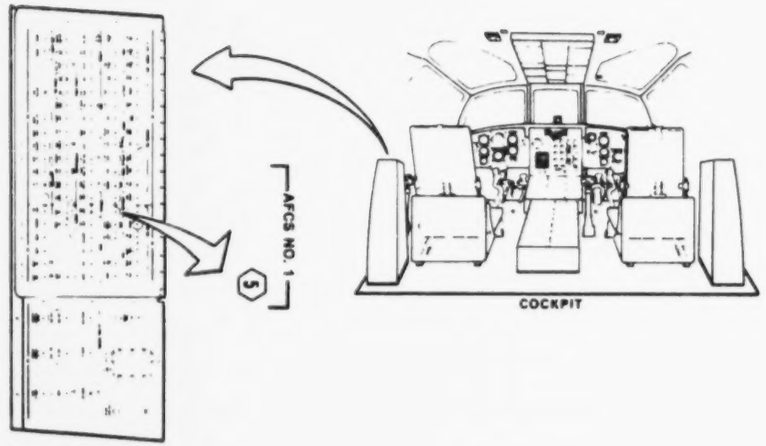
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off






DISCONNECT PLUG 031P8 FROM NO. 1 AFCS COMPUTER. CHECK FOR GROUND ON PLUG 031P8 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-187-20, W645-255-20 OR W664-21-20 BETWEEN NO. 1 AFCS AC CB AND NO. 1 AFCS COMPUTER. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 1 AFCS COMPUTER



45-34

D145-11910-8PA

END OF TASK

11-3.5 CLTV DRIVER ACTR AC CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

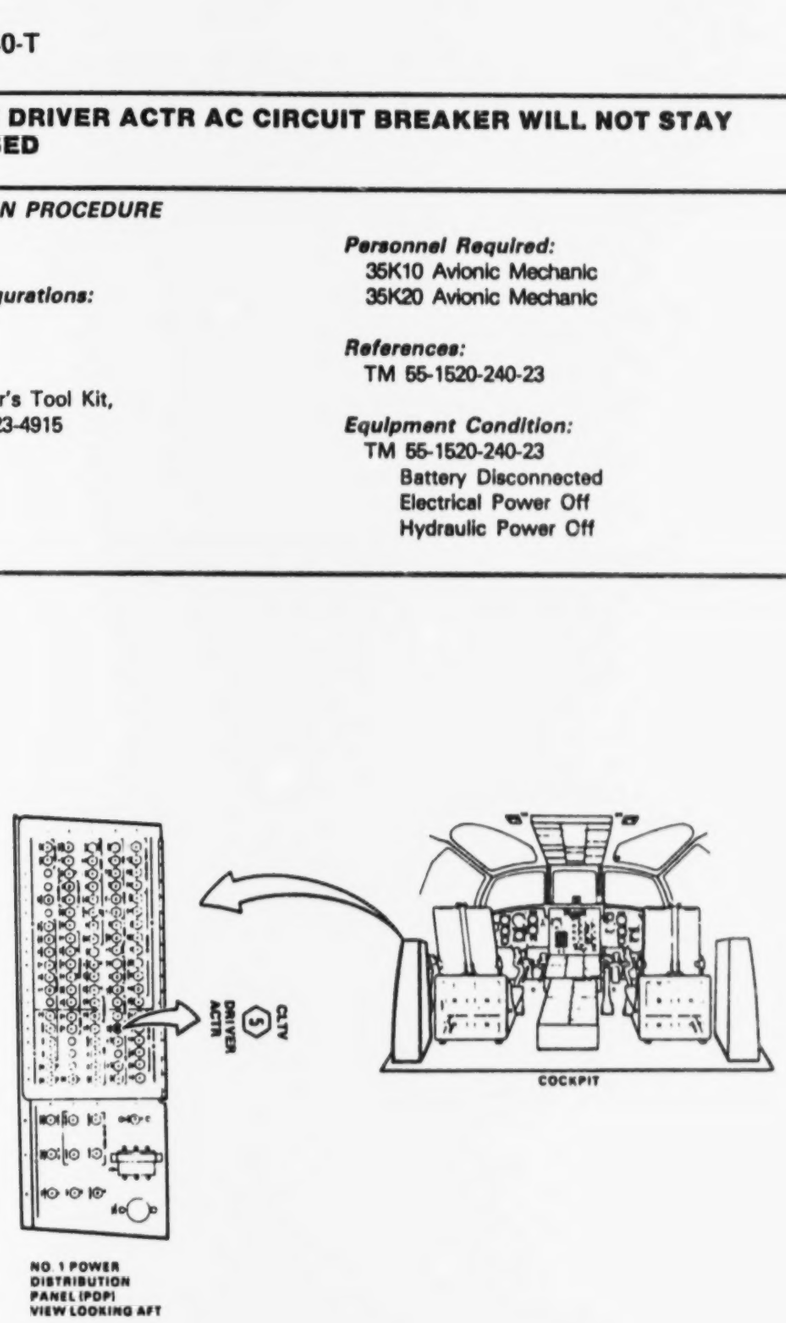
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

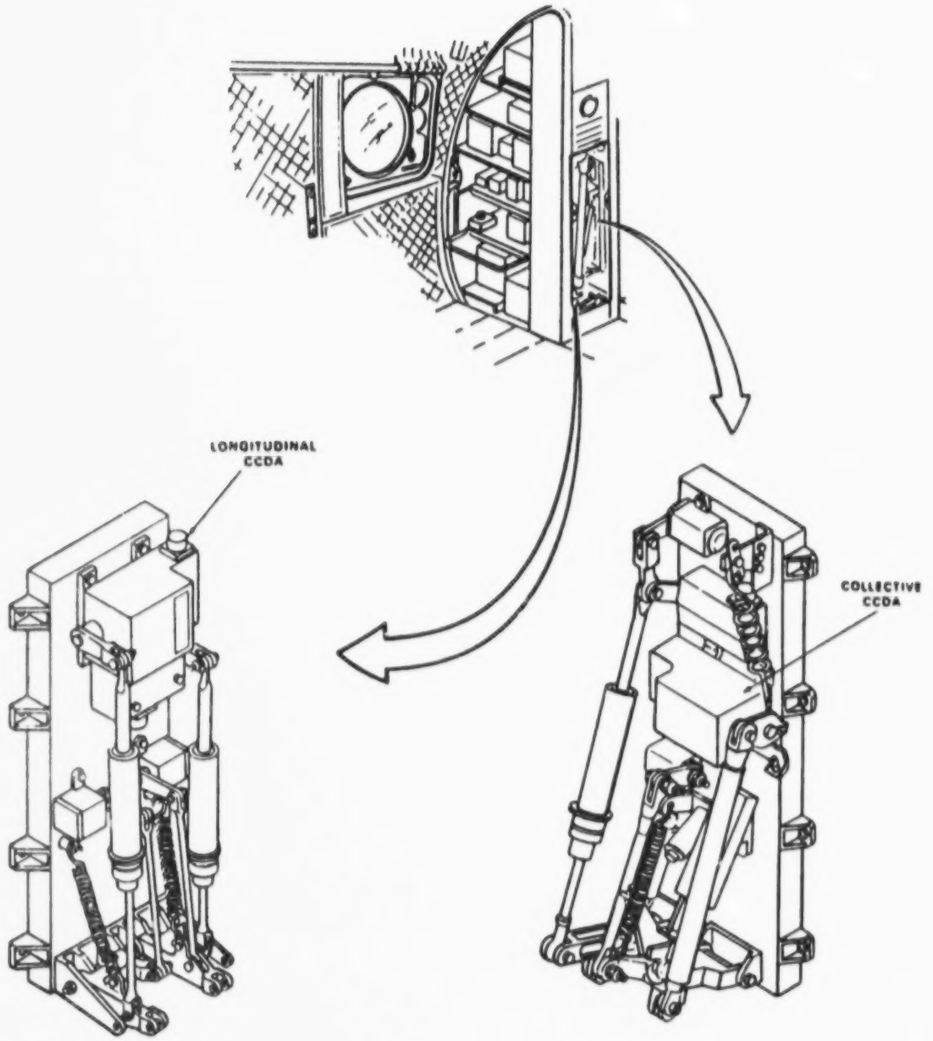
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off





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0148-11902-SPA

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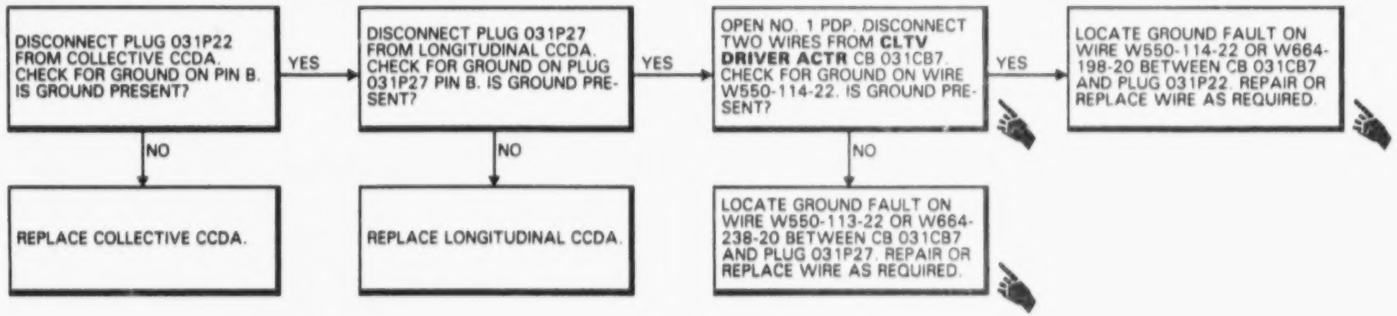

DISCONNECT PLUG 031P22 FROM COLLECTIVE CCDA. CHECK FOR GROUND ON PIN B. IS GROUND PRESENT?
YES
DISCONNECT PLUG 031P27 FROM LONGITUDINAL CCDA. CHECK FOR GROUND ON PLUG 031P27 PIN B. IS GROUND PRESENT?
YES
OPEN NO. 1 PDP. DISCONNECT TWO WIRES FROM CLTV DRIVER ACTR CB 031CB7. CHECK FOR GROUND ON WIRE W550-114-22. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-114-22 OR W664-198-20 BETWEEN CB 031CB7 AND PLUG 031P22. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE COLLECTIVE CCDA.
NO
REPLACE LONGITUDINAL CCDA.
NO
LOCATE GROUND FAULT ON WIRE W550-113-22 OR W664-238-20 BETWEEN CB 031CB7 AND PLUG 031P27. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.6 AFCS NO. 1 DC CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

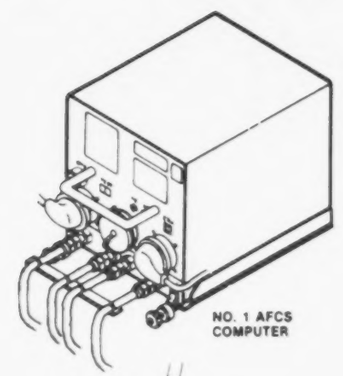
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

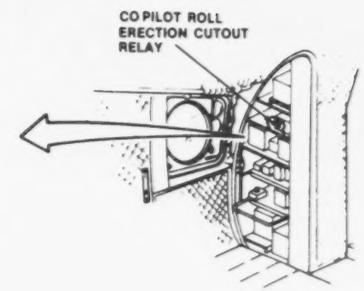
Materials:
None

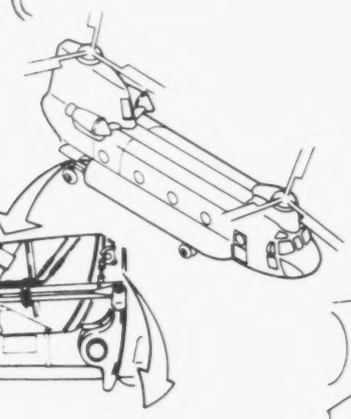
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

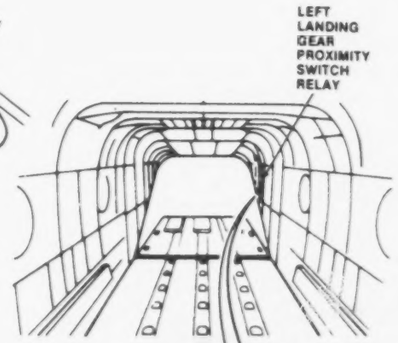
References:
TM 55-1520-240-23

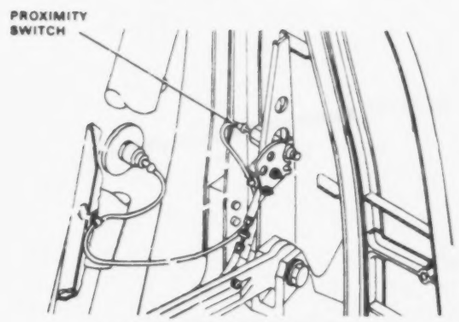
Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off





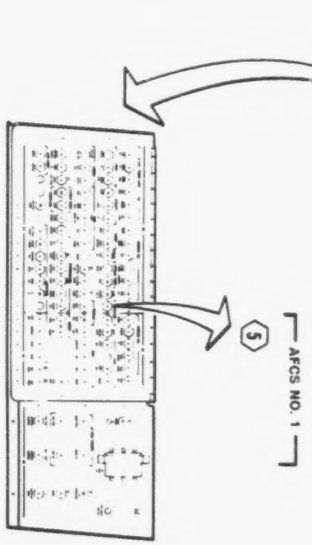




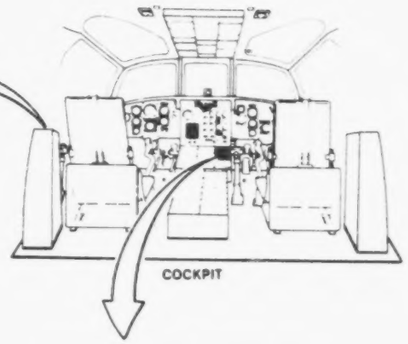


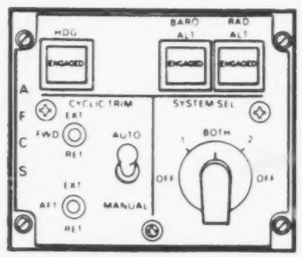
RIGHT LANDING GEAR PROXIMITY SWITCH SHOWN LEFT PROXIMITY SWITCH OPPOSITE

D145-11923-5PA



NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT





AFCS PANEL

90-54

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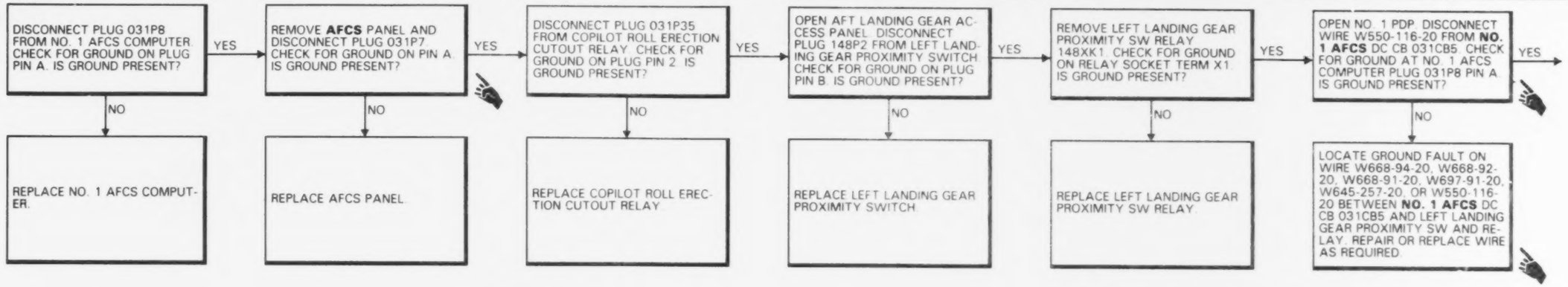
11-3.6 AFCS NO. 1 DC CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DISCONNECT PLUG 031P8 FROM NO. 1 AFCS COMPUTER. CHECK FOR GROUND ON PLUG PIN A. IS GROUND PRESENT?
YES
NO
REPLACE NO. 1 AFCS COMPUTER.
REMOVE AFCS PANEL AND DISCONNECT PLUG 031P7. CHECK FOR GROUND ON PIN A. IS GROUND PRESENT?
YES
NO
REPLACE AFCS PANEL.
DISCONNECT PLUG 031P35 FROM COPILOT ROLL ERECTION CUTOUT RELAY. CHECK FOR GROUND ON PLUG PIN 2. IS GROUND PRESENT?
YES
NO
REPLACE COPILOT ROLL ERECTION CUTOUT RELAY.
OPEN AFT LANDING GEAR ACCESS PANEL. DISCONNECT PLUG 148P2 FROM LEFT LANDING GEAR PROXIMITY SWITCH. CHECK FOR GROUND ON PLUG PIN B. IS GROUND PRESENT?
YES
NO
REPLACE LEFT LANDING GEAR PROXIMITY SWITCH.
REMOVE LEFT LANDING GEAR PROXIMITY SW RELAY 148XK1. CHECK FOR GROUND ON RELAY SOCKET TERM X1. IS GROUND PRESENT?
YES
NO
REPLACE LEFT LANDING GEAR PROXIMITY SW RELAY.
OPEN NO. 1 PDP. DISCONNECT WIRE W550-116-20 FROM NO. 1 AFCS DC CB 031CB5. CHECK FOR GROUND AT NO. 1 AFCS COMPUTER PLUG 031P8 PIN A. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W668-94-20, W668-92-20, W668-91-20, W697-91-20, W645-257-20, OR W550-116-20 BETWEEN NO. 1 AFCS DC CB 031CB5 AND LEFT LANDING GEAR PROXIMITY SW AND RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.

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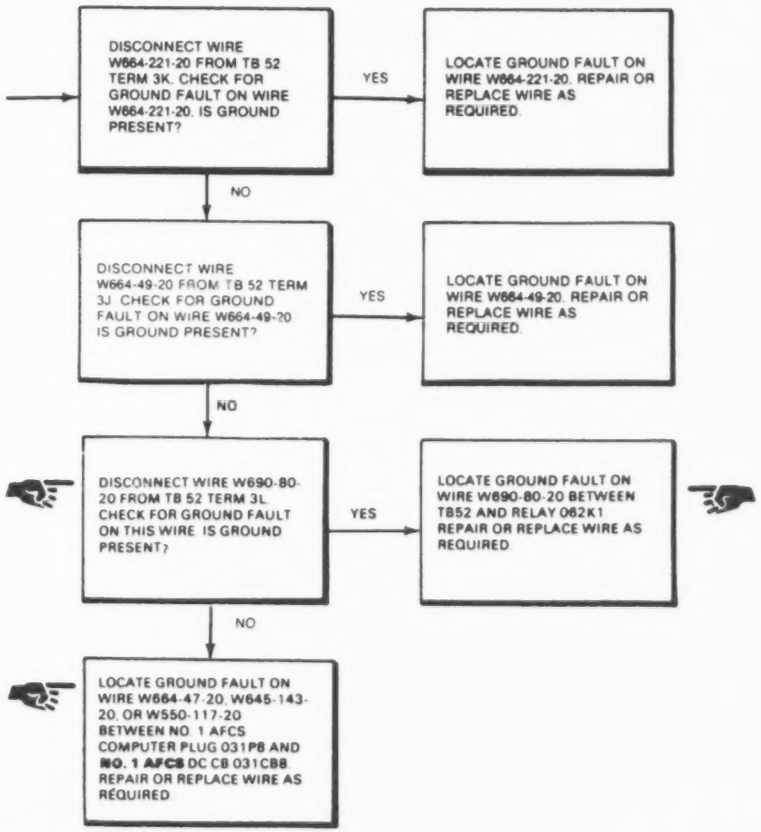
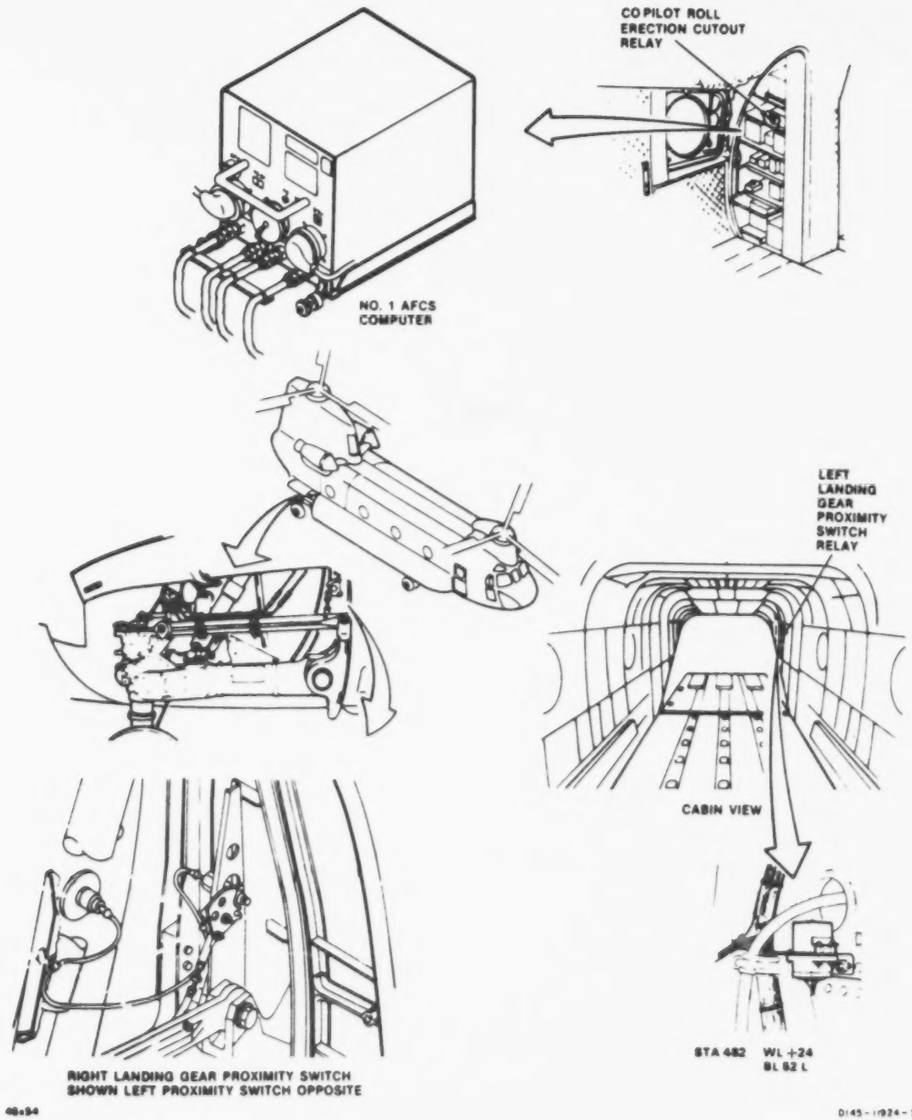
11-3.6 AFCS NO. 1 DC CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DISCONNECT WIRE W664-221-20 FROM TB 52 TERM 3K. CHECK FOR GROUND FAULT ON WIRE W664-221-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-221-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT WIRE W664-49-20 FROM TB 52 TERM 3J. CHECK FOR GROUND FAULT ON WIRE W664-49-20 IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-49-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT WIRE W690-80-20 FROM TB 52 TERM 3L. CHECK FOR GROUND FAULT ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W690-80-20 BETWEEN TB52 AND RELAY 082K1 REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W664-47-20, W645-143-20, OR W550-117-20 BETWEEN NO. 1 AFCS COMPUTER PLUG 031P8 AND NO. 1 AFCS DC CB 031CB8. REPAIR OR REPLACE WIRE AS REQUIRED.


CO PILOT ROLL ERECTION CUTOUT RELAY
NO. 1 AFCS COMPUTER
LEFT LANDING GEAR PROXIMITY SWITCH RELAY
CABIN VIEW
STA 482 WL +24 BL 62 L
RIGHT LANDING GEAR PROXIMITY SWITCH
SHOWN LEFT PROXIMITY SWITCH OPPOSITE
48x94
D145-11924-5PA

END OF TASK

11-3.7 CLTV DRIVER ACTR CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

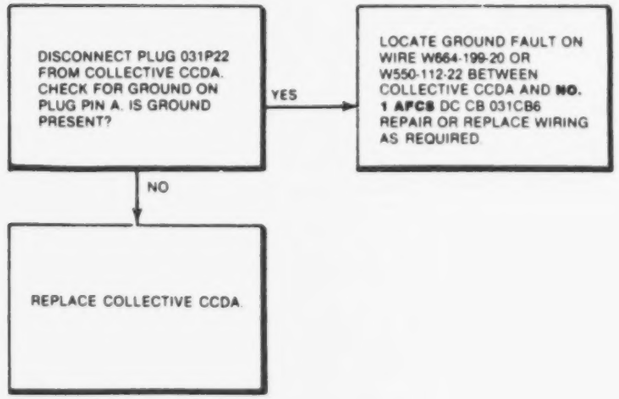
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

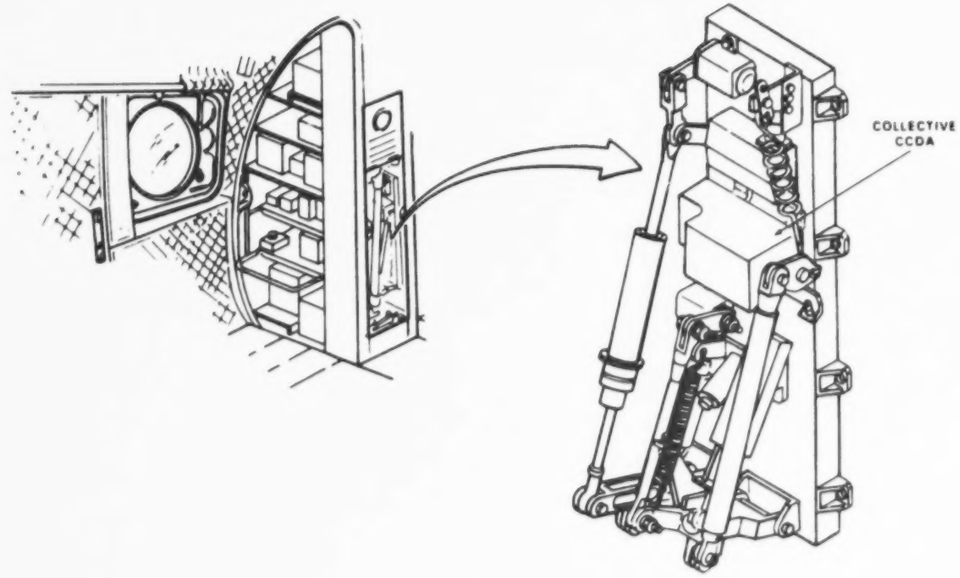
Materials:
None

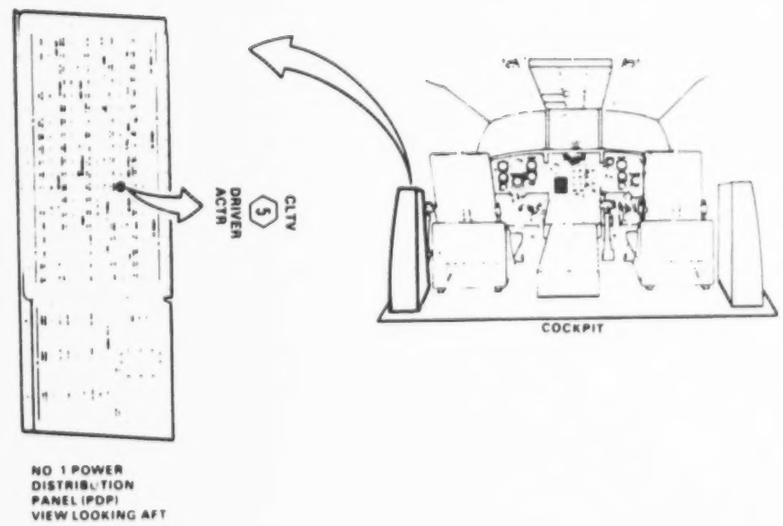
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DISCONNECT PLUG 031P22 FROM COLLECTIVE CCDA. CHECK FOR GROUND ON PLUG PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-199-20 OR W550-112-22 BETWEEN COLLECTIVE CCDA AND NO. 1 AFCS DC CB 031CB6 REPAIR OR REPLACE WIRING AS REQUIRED.
NO
REPLACE COLLECTIVE CCDA.





11-3.8 CYCLIC TRIM MNL CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

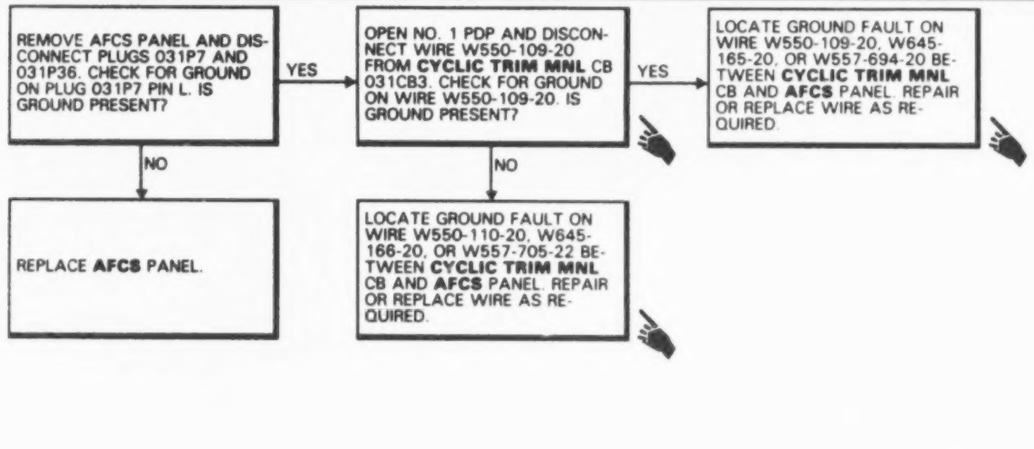
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

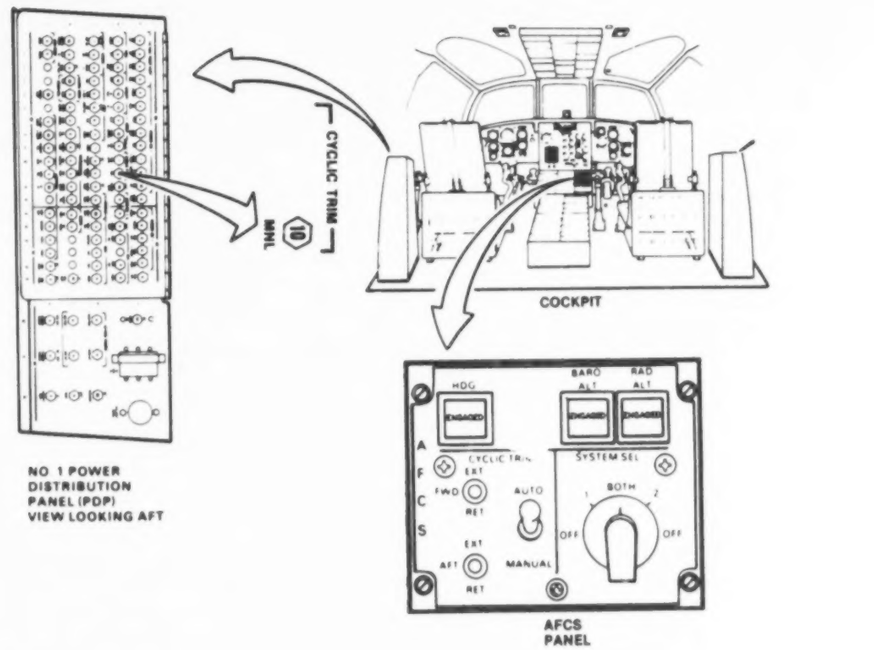
Materials:
None

Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


REMOVE AFCS PANEL AND DISCONNECT PLUGS 031P7 AND 031P36. CHECK FOR GROUND ON PLUG 031P7 PIN L. IS GROUND PRESENT?
YES
OPEN NO. 1 PDP AND DISCONNECT WIRE W550-109-20 FROM **CYCLIC TRIM MNL** CB 031CB3. CHECK FOR GROUND ON WIRE W550-109-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-109-20, W645-165-20, OR W557-694-20 BETWEEN **CYCLIC TRIM MNL** CB AND **AFCS** PANEL. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE **AFCS** PANEL.
NO
LOCATE GROUND FAULT ON WIRE W550-110-20, W645-166-20, OR W557-705-22 BETWEEN **CYCLIC TRIM MNL** CB AND **AFCS** PANEL. REPAIR OR REPLACE WIRE AS REQUIRED.



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D145-11011-SPA

END OF TASK

11-3.9 CYCLIC TRIM FWD ACTR CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

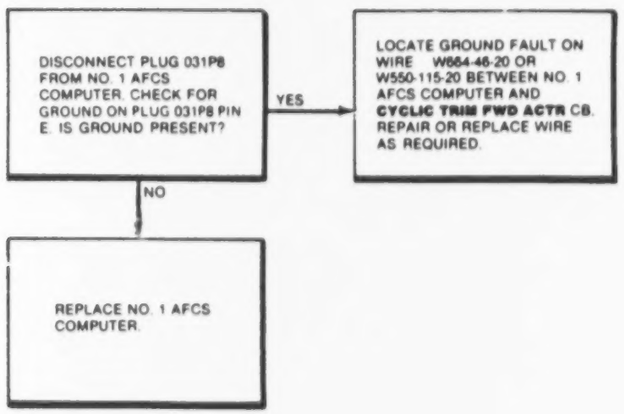
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

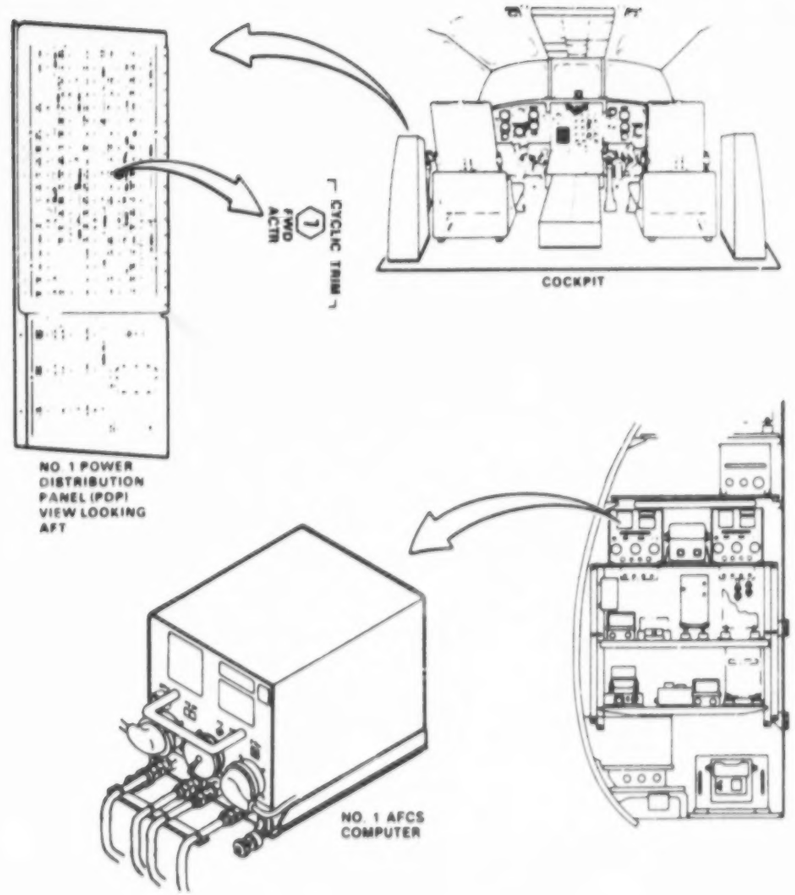
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DISCONNECT PLUG 031P8 FROM NO. 1 AFCS COMPUTER. CHECK FOR GROUND ON PLUG 031P8 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-46-20 OR W550-115-20 BETWEEN NO. 1 AFCS COMPUTER AND CYCLIC TRIM FWD ACTR CB. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 1 AFCS COMPUTER.



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0148-11912-SPA

END OF TASK

11-3.10 NO. 2 AFCS AC CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

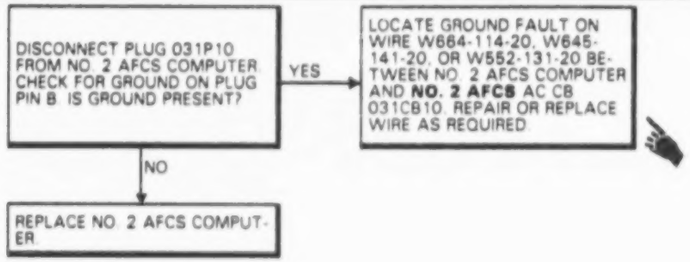
Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Multimeter

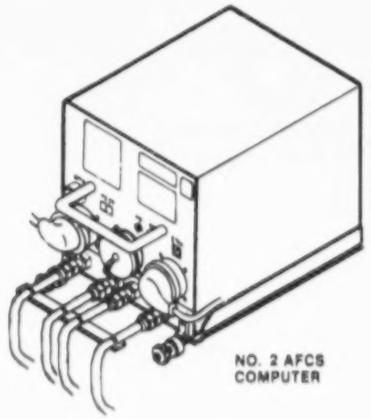
Materials:
None

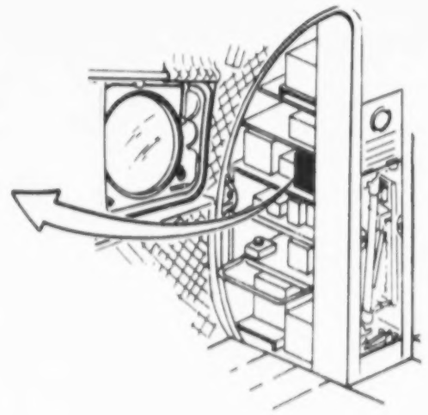
Personnel Required:
Avionic Mechanic

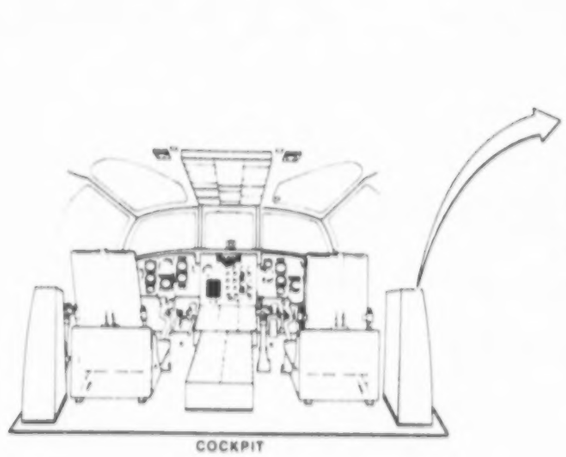
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DISCONNECT PLUG 031P10 FROM NO. 2 AFCS COMPUTER. CHECK FOR GROUND ON PLUG PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-114-20, W645-141-20, OR W552-131-20 BETWEEN NO. 2 AFCS COMPUTER AND **NO. 2 AFCS** AC CB 031CB10. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 2 AFCS COMPUTER.







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D148-11913-9PA

END OF TASK

11-3.11 AFCS NO. 2 DC CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

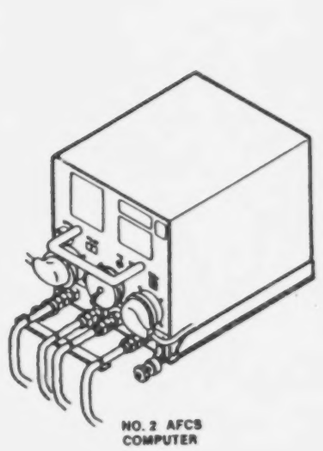
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

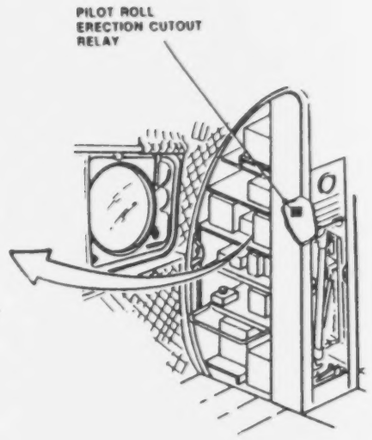
Materials:
None

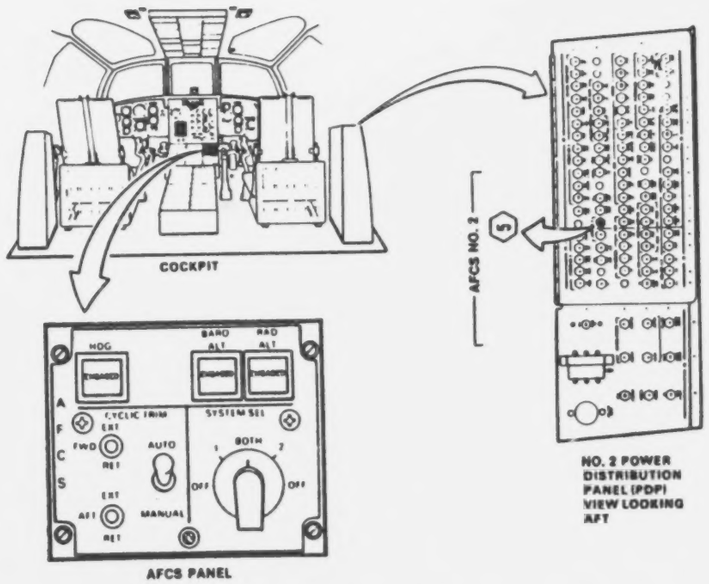
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

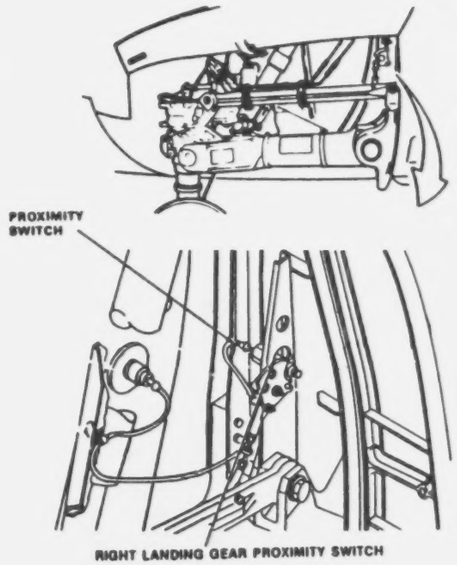
References:
TM 55-1520-240-23

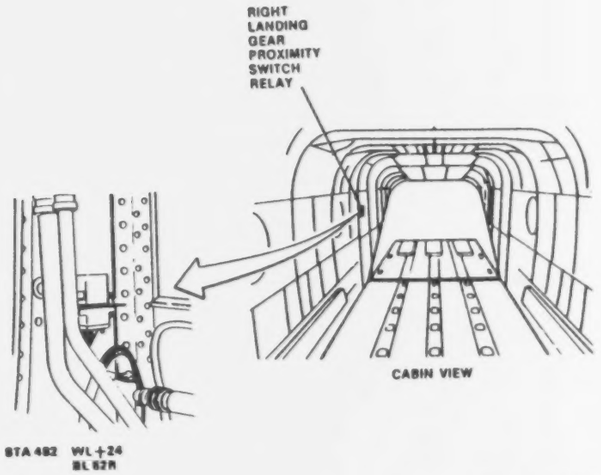
Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off











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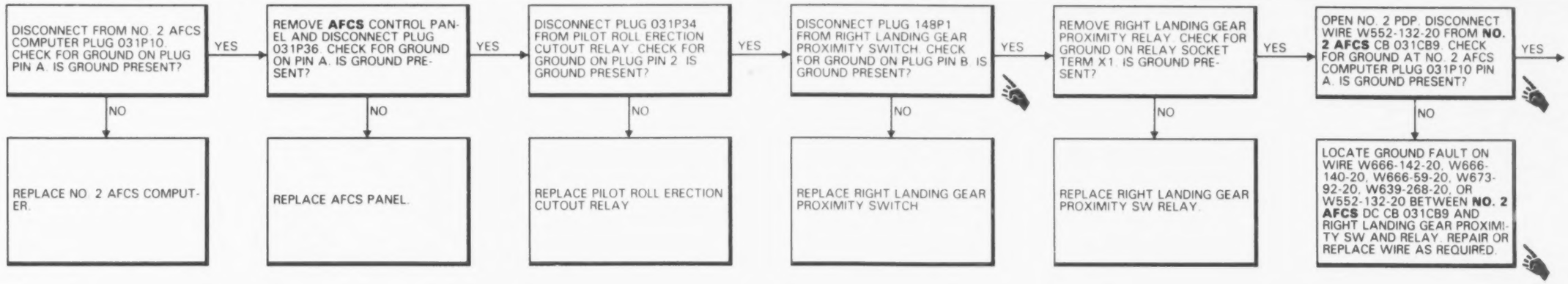
GO TO NEXT PAGE

11-3.11 AFCS NO. 2 DC CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DISCONNECT FROM NO. 2 AFCS COMPUTER PLUG 031P10. CHECK FOR GROUND ON PLUG PIN A. IS GROUND PRESENT?
YES
NO
REPLACE NO. 2 AFCS COMPUTER.
REMOVE AFCS CONTROL PANEL AND DISCONNECT PLUG 031P36. CHECK FOR GROUND ON PIN A. IS GROUND PRESENT?
YES
NO
REPLACE AFCS PANEL.
DISCONNECT PLUG 031P34 FROM PILOT ROLL ERECTION CUTOUT RELAY. CHECK FOR GROUND ON PLUG PIN 2. IS GROUND PRESENT?
YES
NO
REPLACE PILOT ROLL ERECTION CUTOUT RELAY
DISCONNECT PLUG 148P1 FROM RIGHT LANDING GEAR PROXIMITY SWITCH. CHECK FOR GROUND ON PLUG PIN B. IS GROUND PRESENT?
YES
NO
REPLACE RIGHT LANDING GEAR PROXIMITY SWITCH
REMOVE RIGHT LANDING GEAR PROXIMITY RELAY. CHECK FOR GROUND ON RELAY SOCKET TERM X1. IS GROUND PRESENT?
YES
NO
REPLACE RIGHT LANDING GEAR PROXIMITY SW RELAY.
OPEN NO. 2 PDP. DISCONNECT WIRE W552-132-20 FROM NO. 2 AFCS CB 031CB9. CHECK FOR GROUND AT NO. 2 AFCS COMPUTER PLUG 031P10 PIN A. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W666-142-20, W666-140-20, W666-59-20, W673-92-20, W639-268-20, OR W552-132-20 BETWEEN NO. 2 AFCS DC CB 031CB9 AND RIGHT LANDING GEAR PROXIMITY SW AND RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.

GO TO NEXT PAGE

11-3.11 AFCS NO. 2 DC CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

DISCONNECT WIRE W664-224-20 FROM TB17 TERM 1J. CHECK FOR GROUND ON WIRE W664-224-20. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W664-224-20. REPAIR OR REPLACE WIRE AS REQUIRED.

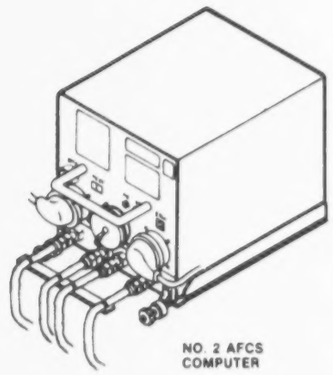
NO ↓

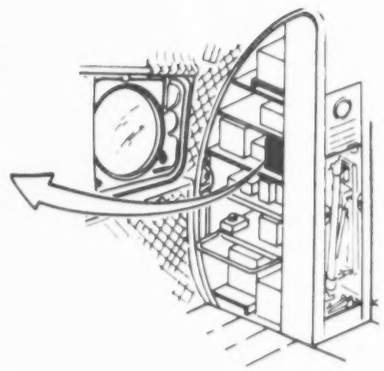
DISCONNECT WIRE W664-226-20 FROM TB17 TERM 1M. CHECK FOR GROUND ON WIRE W664-226-20. IS GROUND PRESENT?

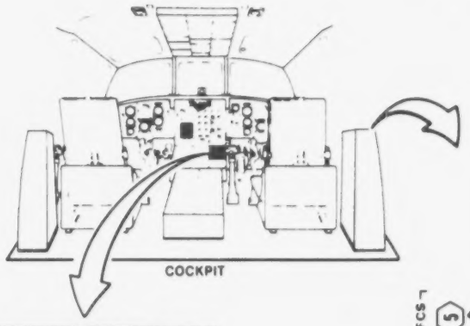
YES → LOCATE GROUND FAULT ON WIRE W664-226-20. REPAIR OR REPLACE WIRE AS REQUIRED.

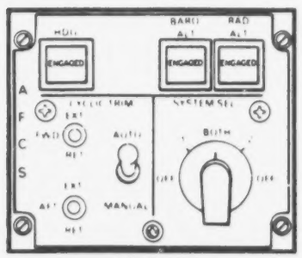
NO ↓

LOCATE GROUND FAULT ON W664-118-20, W639-144-20, OR W552-133-20 BETWEEN NO. 2 AFCS COMPUTER AND **NO. 2 AFCS** CB 031CB9. REPAIR OR REPLACE WIRE AS REQUIRED.

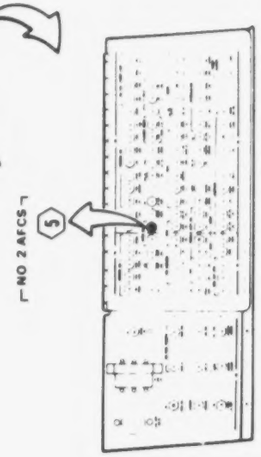




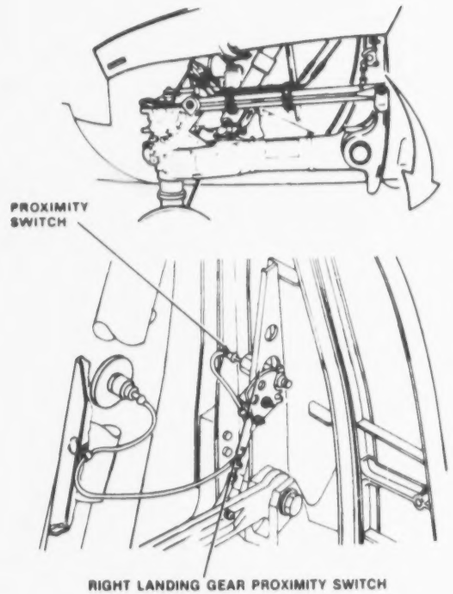




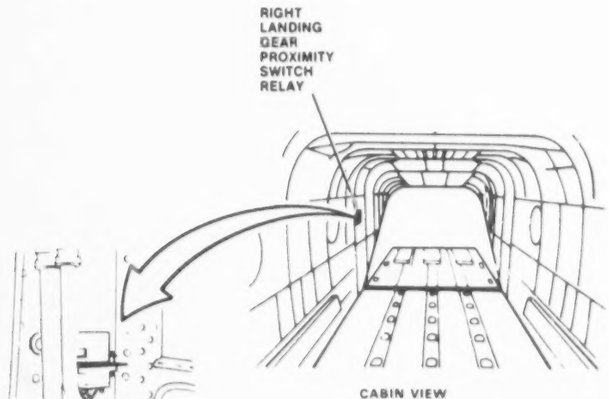
AFCS PANEL



NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



RIGHT LANDING GEAR PROXIMITY SWITCH



CABIN VIEW

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D145-11918-SPA

END OF TASK

11-3.12 CYCLIC TRIM AFT ACTUATOR CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23

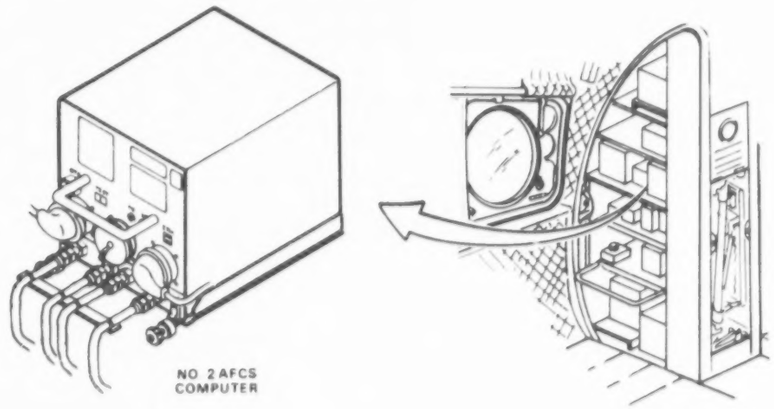
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

DISCONNECT PLUG 031P10 ON NO. 2 AFCS COMPUTER. CHECK FOR GROUND ON PLUG 031P10 PIN E. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W664-113-20, W645-140-20, OR W552-130-20 BETWEEN NO. 2 AFCS COMPUTER AND NO. 2 PDP **CYCLIC TRIM AFT ACT** CB 031CB1. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓

REPLACE NO. 2 AFCS COMPUTER.



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D145-11914-SPA

11-3.13 NO. 1 AFCS OFF CAPSULE IS OUT WITH SYSTEM SELECTED OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

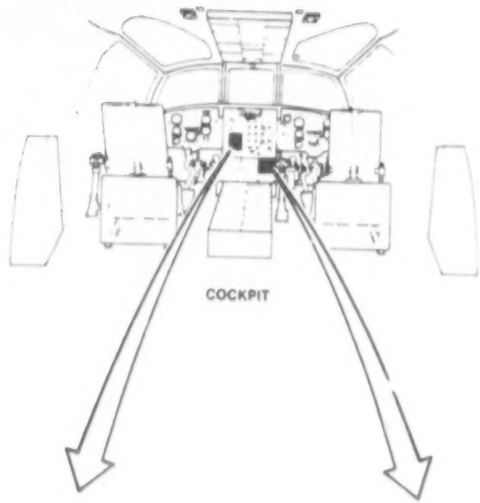
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

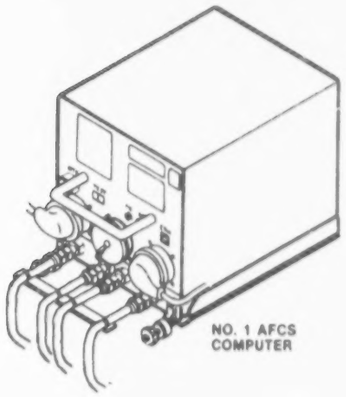
Materials:
None

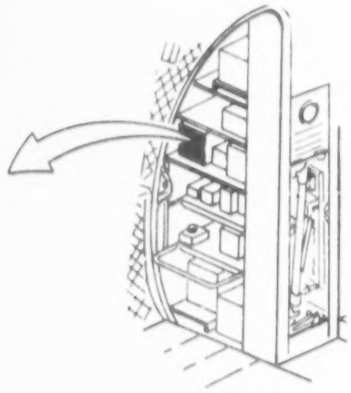
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

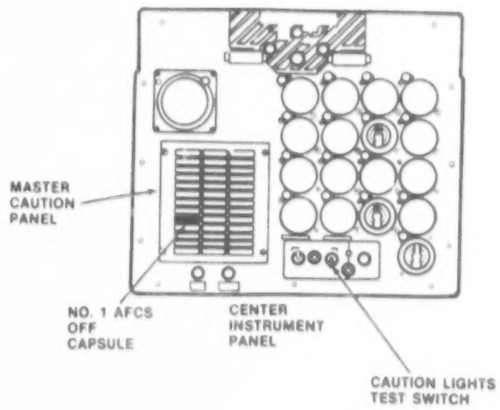
References:
TM 55-1520-240-23

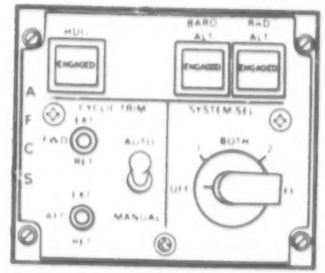
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On











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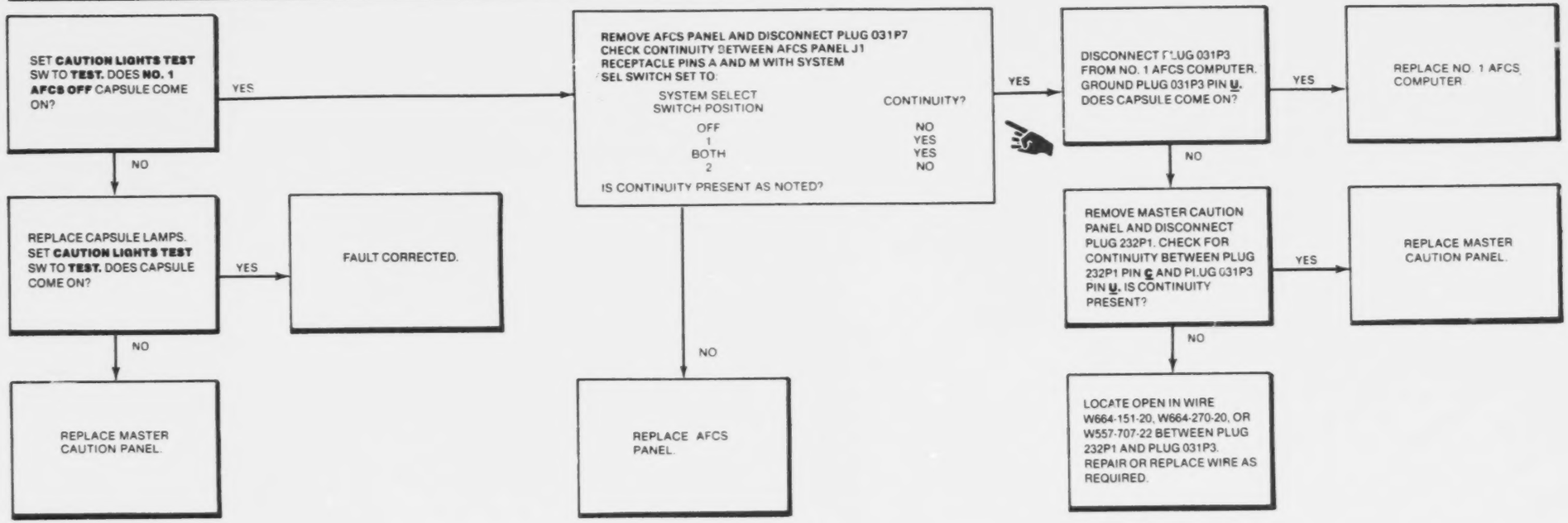
11-3.13 NO. 1 AFCS OFF CAPSULE IS OUT WITH SYSTEM SELECTED OFF (Continued)


SET CAUTION LIGHTS TEST SW TO TEST. DOES NO. 1 AFCS OFF CAPSULE COME ON?
YES
NO
REPLACE CAPSULE LAMPS. SET CAUTION LIGHTS TEST SW TO TEST. DOES CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
REPLACE MASTER CAUTION PANEL.
REMOVE AFCS PANEL AND DISCONNECT PLUG 031P7
CHECK CONTINUITY BETWEEN AFCS PANEL J1 RECEPTACLE PINS A AND M WITH SYSTEM SEL SWITCH SET TO:
SYSTEM SELECT SWITCH POSITION
CONTINUITY?
OFF
NO
1
YES
BOTH
YES
2
NO
IS CONTINUITY PRESENT AS NOTED?
YES
NO
REPLACE AFCS PANEL.
DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. GROUND PLUG 031P3 PIN U. DOES CAPSULE COME ON?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REMOVE MASTER CAUTION PANEL AND DISCONNECT PLUG 232P1. CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN C AND PLUG 031P3 PIN U. IS CONTINUITY PRESENT?
YES
REPLACE MASTER CAUTION PANEL.
NO
LOCATE OPEN IN WIRE W664-151-20, W664-270-20, OR W557-707-22 BETWEEN PLUG 232P1 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

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11-3.14 NO. 2 AFCS OFF CAPSULE IS OUT WITH SYSTEM SELECTED OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

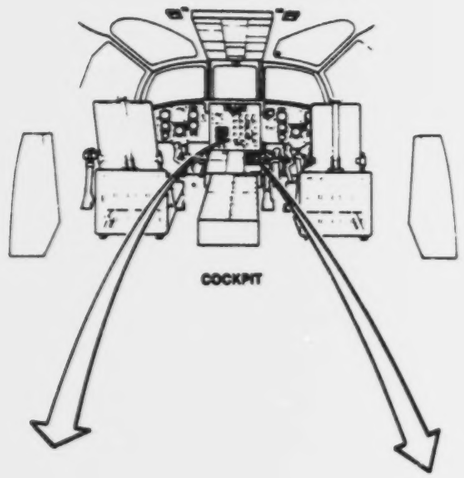
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

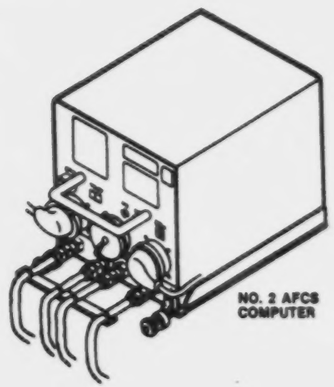
Materials:
None

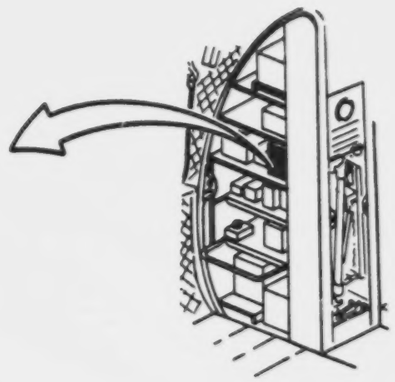
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

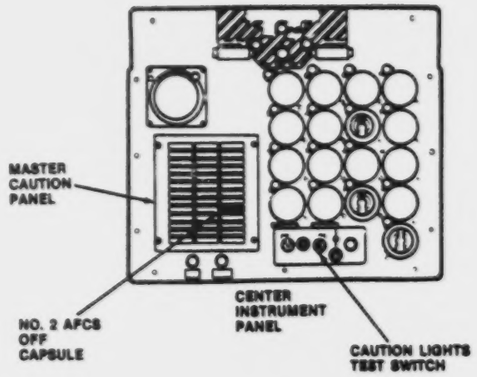
References:
TM 55-1520-240-23

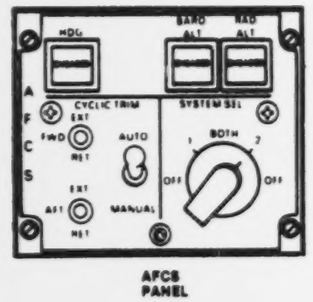
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On











AFCS
PANEL

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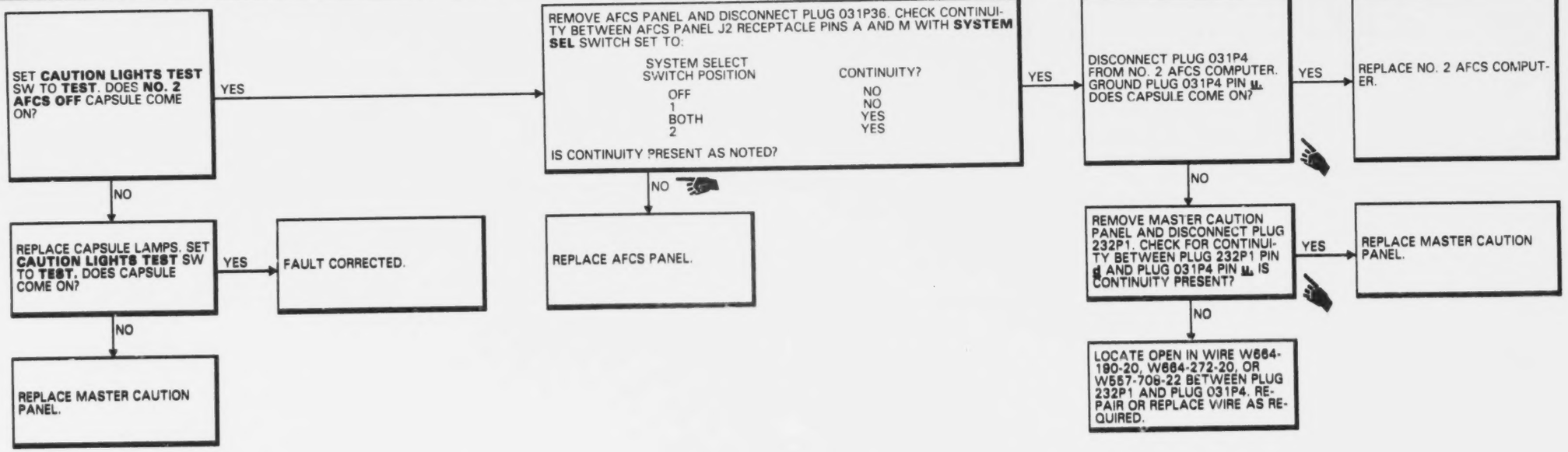
11-3.14 NO. 2 AFCS OFF CAPSULE IS OUT WITH SYSTEM SELECTED OFF (Continued)


SET CAUTION LIGHTS TEST SW TO TEST. DOES NO. 2 AFCS OFF CAPSULE COME ON?
YES
NO
REPLACE CAPSULE LAMPS. SET CAUTION LIGHTS TEST SW TO TEST. DOES CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
REPLACE MASTER CAUTION PANEL.
REMOVE AFCS PANEL AND DISCONNECT PLUG 031P36. CHECK CONTINUITY BETWEEN AFCS PANEL J2 RECEPTACLE PINS A AND M WITH SYSTEM SEL SWITCH SET TO:
SYSTEM SELECT SWITCH POSITION
CONTINUITY?
OFF
NO
1
NO
BOTH
YES
2
YES
IS CONTINUITY PRESENT AS NOTED?
NO
REPLACE AFCS PANEL.
YES
DISCONNECT PLUG 031P4 FROM NO. 2 AFCS COMPUTER. GROUND PLUG 031P4 PIN M. DOES CAPSULE COME ON?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REMOVE MASTER CAUTION PANEL AND DISCONNECT PLUG 232P1. CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN d AND PLUG 031P4 PIN M. IS CONTINUITY PRESENT?
YES
REPLACE MASTER CAUTION PANEL.
NO
LOCATE OPEN IN WIRE W664-190-20, W664-272-20, OR W557-708-22 BETWEEN PLUG 232P1 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.15 BOTH LCT INDICATORS NOT IN GROUND POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

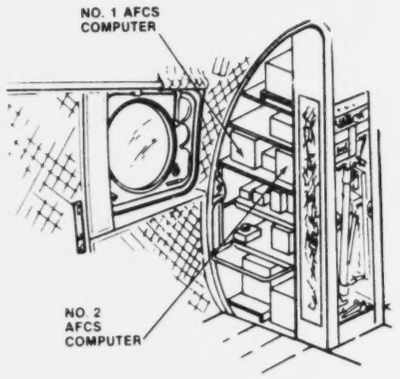
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

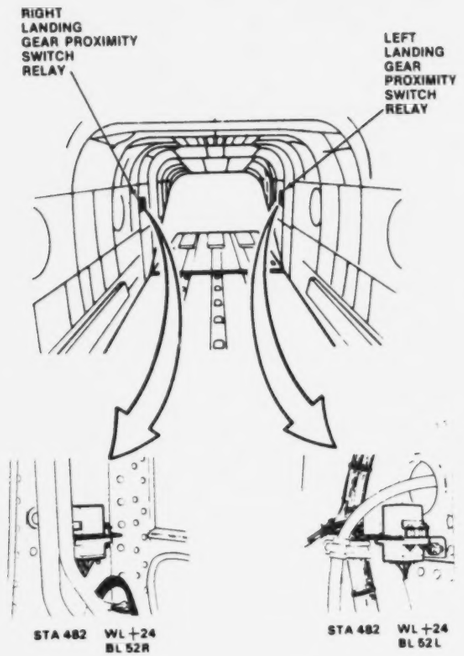
Materials:
None

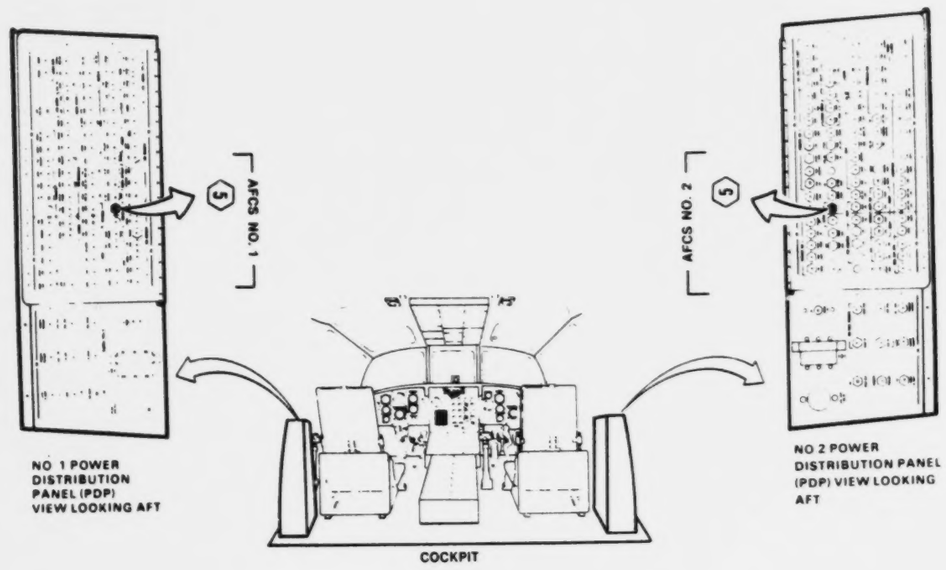
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

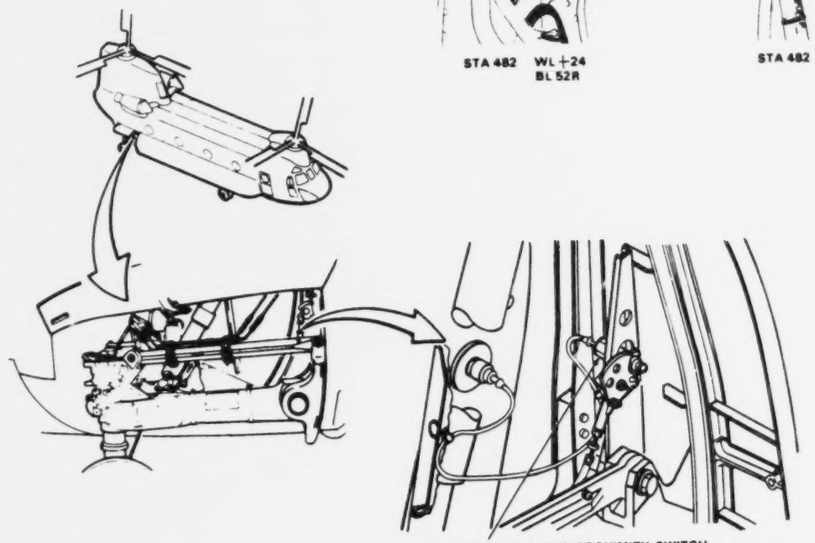
References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use




RIGHT LANDING GEAR PROXIMITY SWITCH RELAY
LEFT LANDING GEAR PROXIMITY SWITCH RELAY
STA 482 WL +24 BL 52R
STA 482 WL +24 BL 52L


AFCS NO. 1
AFCS NO. 2
NO 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT
NO 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT
COCKPIT



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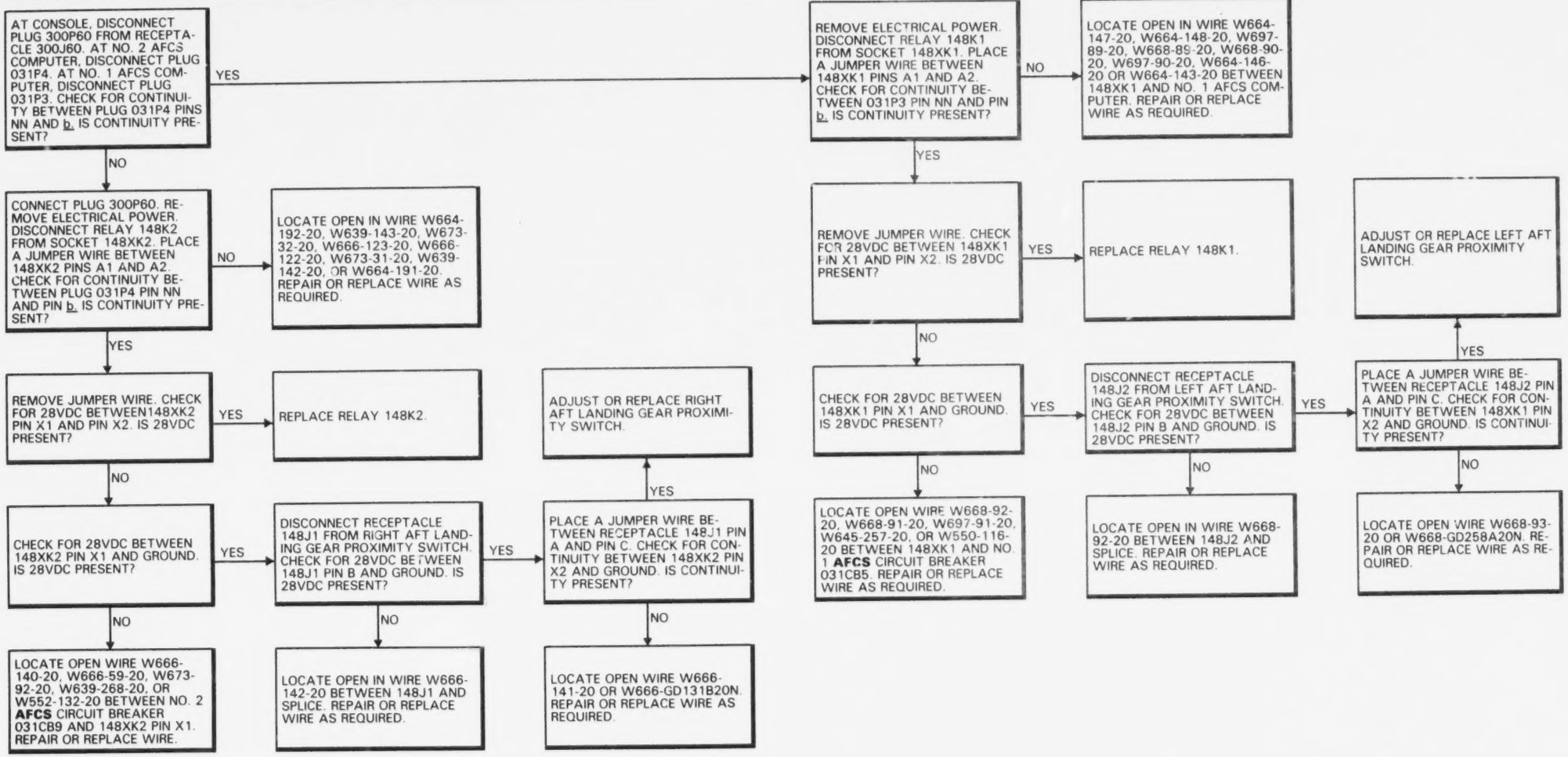
11-3.15 BOTH LCT INDICATORS NOT IN GROUND POSITION (Continued)


AT CONSOLE, DISCONNECT PLUG 300P60 FROM RECEPTACLE 300J60. AT NO. 2 AFCS COMPUTER, DISCONNECT PLUG 031P4. AT NO. 1 AFCS COMPUTER, DISCONNECT PLUG 031P3. CHECK FOR CONTINUITY BETWEEN PLUG 031P4 PINS NN AND b. IS CONTINUITY PRESENT?
YES
NO
REMOVE ELECTRICAL POWER. DISCONNECT RELAY 148K1 FROM SOCKET 148XK1. PLACE A JUMPER WIRE BETWEEN 148XK1 PINS A1 AND A2. CHECK FOR CONTINUITY BETWEEN 031P3 PIN NN AND PIN b. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W664-147-20, W664-148-20, W697-89-20, W668-89-20, W668-90-20, W697-90-20, W664-146-20 OR W664-143-20 BETWEEN 148XK1 AND NO. 1 AFCS COMPUTER. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CONNECT PLUG 300P60. REMOVE ELECTRICAL POWER. DISCONNECT RELAY 148K2 FROM SOCKET 148XK2. PLACE A JUMPER WIRE BETWEEN 148XK2 PINS A1 AND A2. CHECK FOR CONTINUITY BETWEEN PLUG 031P4 PIN NN AND PIN b. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W664-192-20, W639-143-20, W673-32-20, W666-123-20, W666-122-20, W673-31-20, W639-142-20, OR W664-191-20. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REMOVE JUMPER WIRE. CHECK FOR 28VDC BETWEEN 148XK1 PIN X1 AND PIN X2. IS 28VDC PRESENT?
YES
REPLACE RELAY 148K1.
NO
REMOVE JUMPER WIRE. CHECK FOR 28VDC BETWEEN148XK2 PIN X1 AND PIN X2. IS 28VDC PRESENT?
YES
REPLACE RELAY 148K2.
NO
CHECK FOR 28VDC BETWEEN 148XK1 PIN X1 AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT RECEPTACLE 148J2 FROM LEFT AFT LANDING GEAR PROXIMITY SWITCH. CHECK FOR 28VDC BETWEEN 148J2 PIN B AND GROUND. IS 28VDC PRESENT?
YES
PLACE A JUMPER WIRE BETWEEN RECEPTACLE 148J2 PIN A AND PIN C. CHECK FOR CONTINUITY BETWEEN 148XK1 PIN X2 AND GROUND. IS CONTINUITY PRESENT?
YES
ADJUST OR REPLACE LEFT AFT LANDING GEAR PROXIMITY SWITCH.
NO
LOCATE OPEN WIRE W668-92-20, W668-91-20, W697-91-20, W645-257-20, OR W550-116-20 BETWEEN 148XK1 AND NO. 1 AFCS CIRCUIT BREAKER 031CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W668-92-20 BETWEEN 148J2 AND SPLICE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN WIRE W668-93-20 OR W668-GD258A20N. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28VDC BETWEEN 148XK2 PIN X1 AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT RECEPTACLE 148J1 FROM RIGHT AFT LANDING GEAR PROXIMITY SWITCH. CHECK FOR 28VDC BETWEEN 148J1 PIN B AND GROUND. IS 28VDC PRESENT?
YES
PLACE A JUMPER WIRE BETWEEN RECEPTACLE 148J1 PIN A AND PIN C. CHECK FOR CONTINUITY BETWEEN 148XK2 PIN X2 AND GROUND. IS CONTINUITY PRESENT?
YES
ADJUST OR REPLACE RIGHT AFT LANDING GEAR PROXIMITY SWITCH.
NO
LOCATE OPEN WIRE W666-141-20 OR W666-GD131B20N. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W666-142-20 BETWEEN 148J1 AND SPLICE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN WIRE W666-140-20, W666-59-20, W673-92-20, W639-268-20, OR W552-132-20 BETWEEN NO. 2 AFCS CIRCUIT BREAKER 031CB9 AND 148XK2 PIN X1. REPAIR OR REPLACE WIRE.

END OF TASK

11-3.16 FORWARD LCT INDICATOR NOT IN GND POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

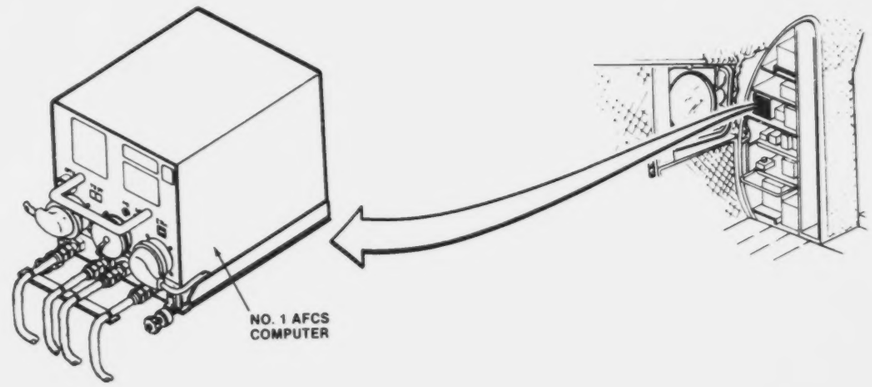
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

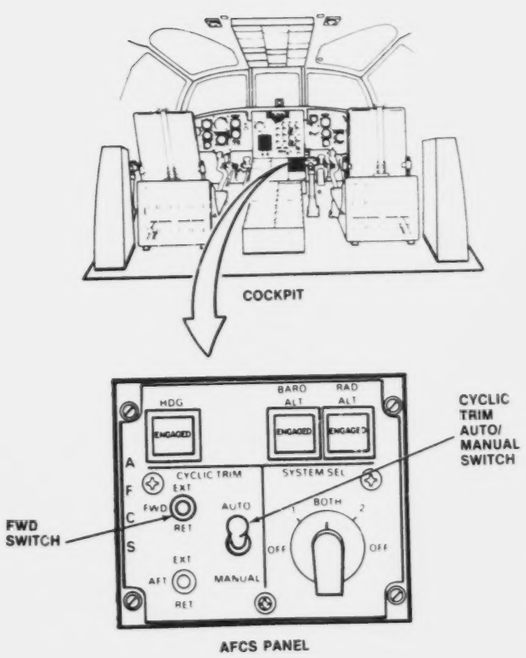
Materials:
None

Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On





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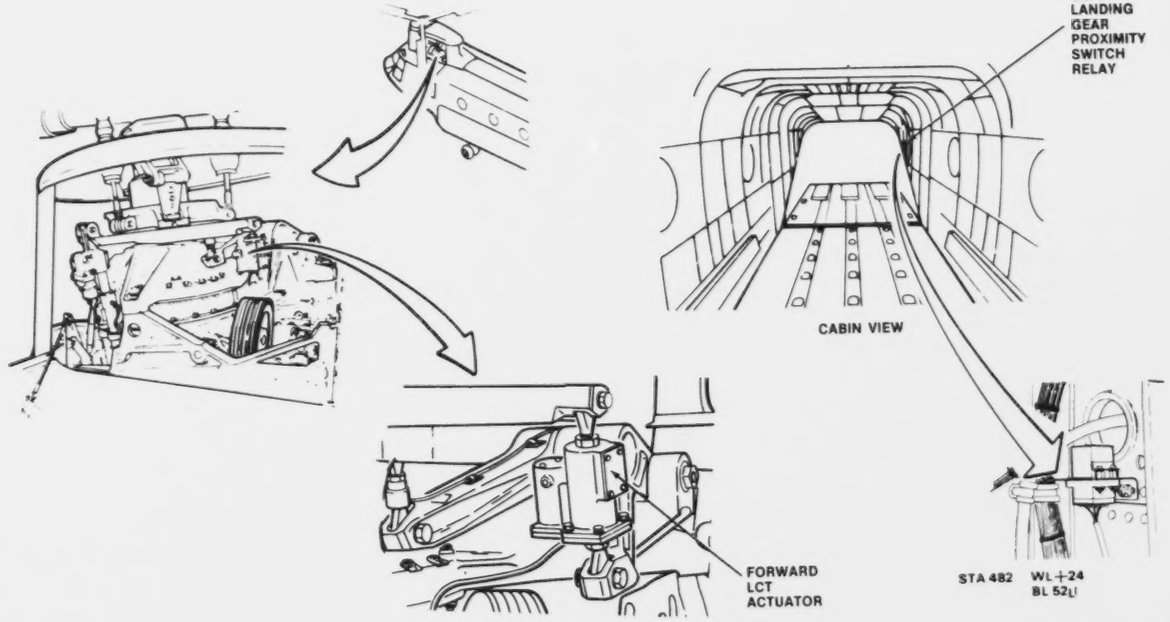

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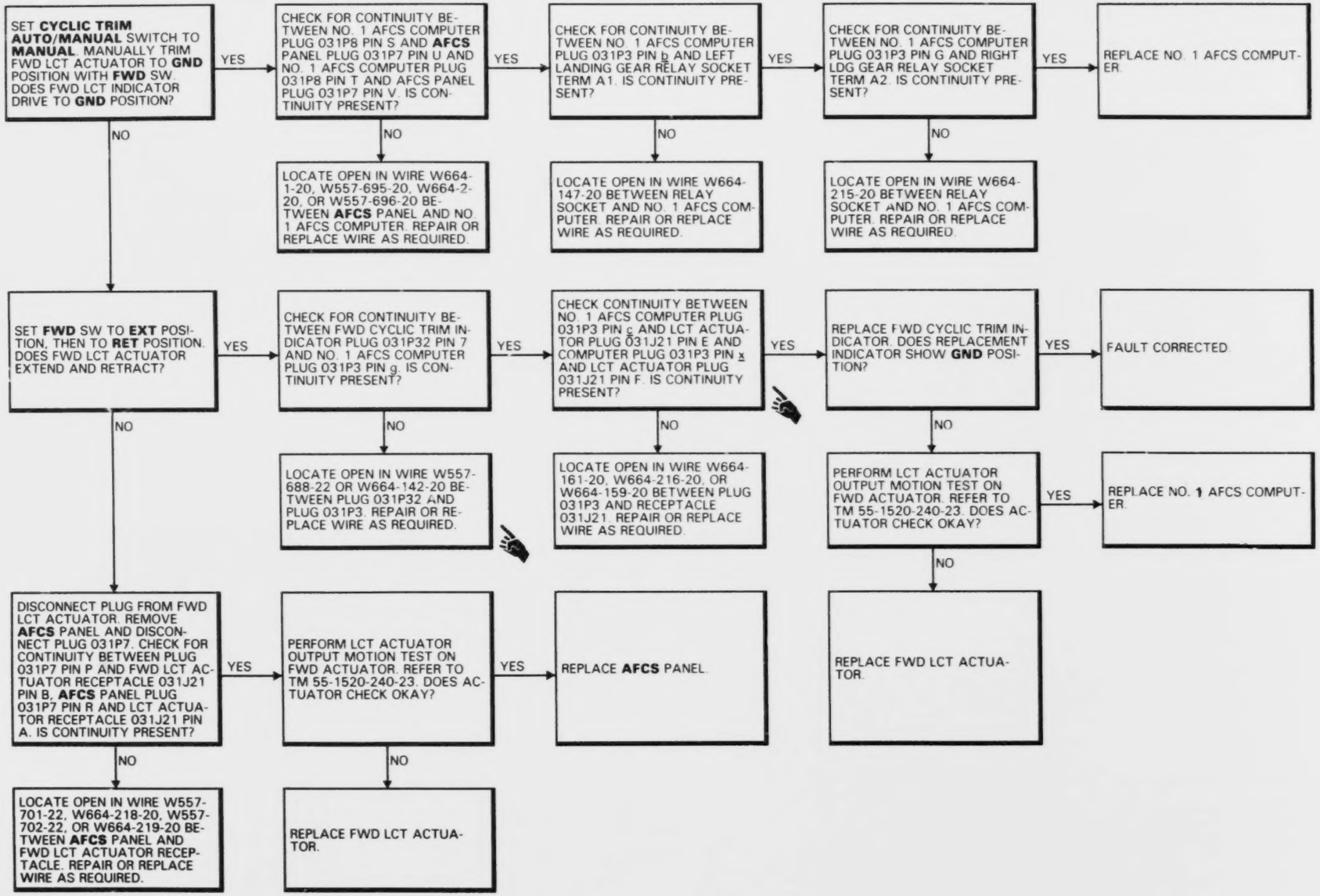

SET **CYCLIC TRIM AUTO/MANUAL** SWITCH TO **MANUAL**. MANUALLY TRIM FWD LCT ACTUATOR TO **GND** POSITION WITH **FWD** SW. DOES FWD LCT INDICATOR DRIVE TO **GND** POSITION?
YES
CHECK FOR CONTINUITY BETWEEN NO. 1 AFCS COMPUTER PLUG 031P8 PIN S AND **AFCS** PANEL PLUG 031P7 PIN U AND NO. 1 AFCS COMPUTER PLUG 031P8 PIN T AND AFCS PANEL PLUG 031P7 PIN V. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN NO. 1 AFCS COMPUTER PLUG 031P3 PIN b AND LEFT LANDING GEAR RELAY SOCKET TERM A1. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN NO. 1 AFCS COMPUTER PLUG 031P3 PIN G AND RIGHT LDG GEAR RELAY SOCKET TERM A2. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
LOCATE OPEN IN WIRE W664-1-20, W557-695-20, W664-2-20, OR W557-696-20 BETWEEN **AFCS** PANEL AND NO 1 AFCS COMPUTER. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-147-20 BETWEEN RELAY SOCKET AND NO. 1 AFCS COMPUTER. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-215-20 BETWEEN RELAY SOCKET AND NO. 1 AFCS COMPUTER. REPAIR OR REPLACE WIRE AS REQUIRED.
SET **FWD** SW TO **EXT** POSITION, THEN TO **RET** POSITION. DOES FWD LCT ACTUATOR EXTEND AND RETRACT?
YES
CHECK FOR CONTINUITY BETWEEN FWD CYCLIC TRIM INDICATOR PLUG 031P32 PIN 7 AND NO. 1 AFCS COMPUTER PLUG 031P3 PIN g. IS CONTINUITY PRESENT?
YES
CHECK CONTINUITY BETWEEN NO. 1 AFCS COMPUTER PLUG 031P3 PIN c AND LCT ACTUATOR PLUG 031J21 PIN E AND COMPUTER PLUG 031P3 PIN x AND LCT ACTUATOR PLUG 031J21 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE FWD CYCLIC TRIM INDICATOR. DOES REPLACEMENT INDICATOR SHOW **GND** POSITION?
YES
FAULT CORRECTED.
NO
LOCATE OPEN IN WIRE W557-688-22 OR W664-142-20 BETWEEN PLUG 031P32 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-161-20, W664-216-20, OR W664-159-20 BETWEEN PLUG 031P3 AND RECEPTACLE 031J21. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON FWD ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REPLACE FWD LCT ACTUATOR.
DISCONNECT PLUG FROM FWD LCT ACTUATOR. REMOVE **AFCS** PANEL AND DISCONNECT PLUG 031P7. CHECK FOR CONTINUITY BETWEEN PLUG 031P7 PIN P AND FWD LCT ACTUATOR RECEPTACLE 031J21 PIN B, **AFCS** PANEL PLUG 031P7 PIN R AND LCT ACTUATOR RECEPTACLE 031J21 PIN A. IS CONTINUITY PRESENT?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON FWD ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
REPLACE **AFCS** PANEL.
NO
LOCATE OPEN IN WIRE W557-701-22, W664-218-20, W557-702-22, OR W664-219-20 BETWEEN **AFCS** PANEL AND FWD LCT ACTUATOR RECEPTACLE. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE FWD LCT ACTUATOR.

END OF TASK

11-3.17 AFT LCT INDICATOR NOT IN GND POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

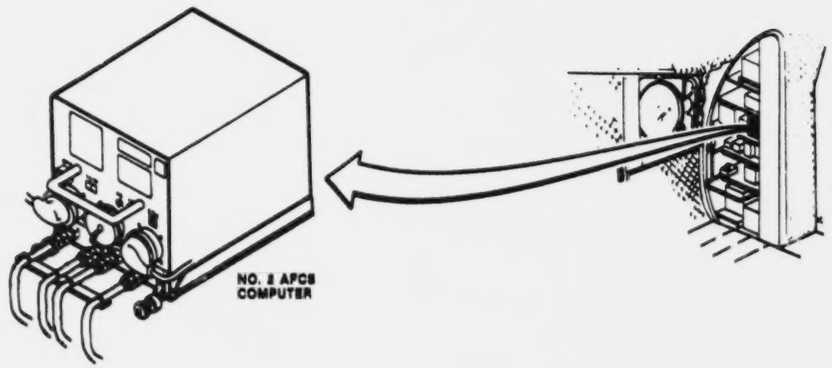
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

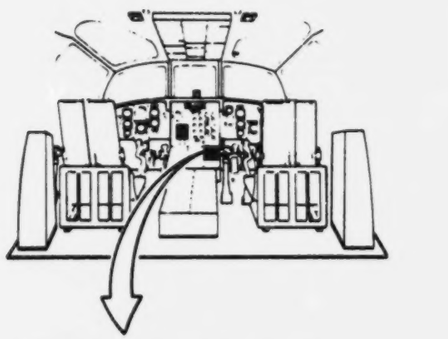
Materials:
None

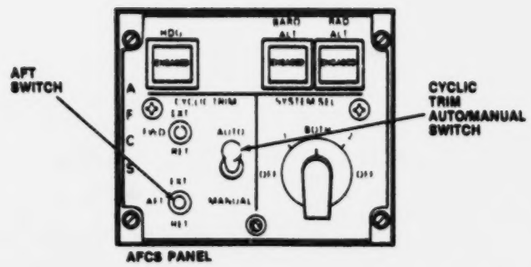
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On







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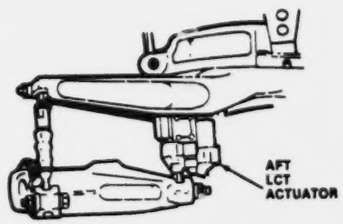

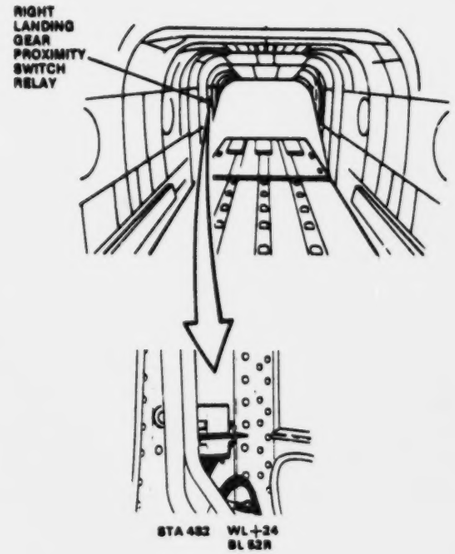

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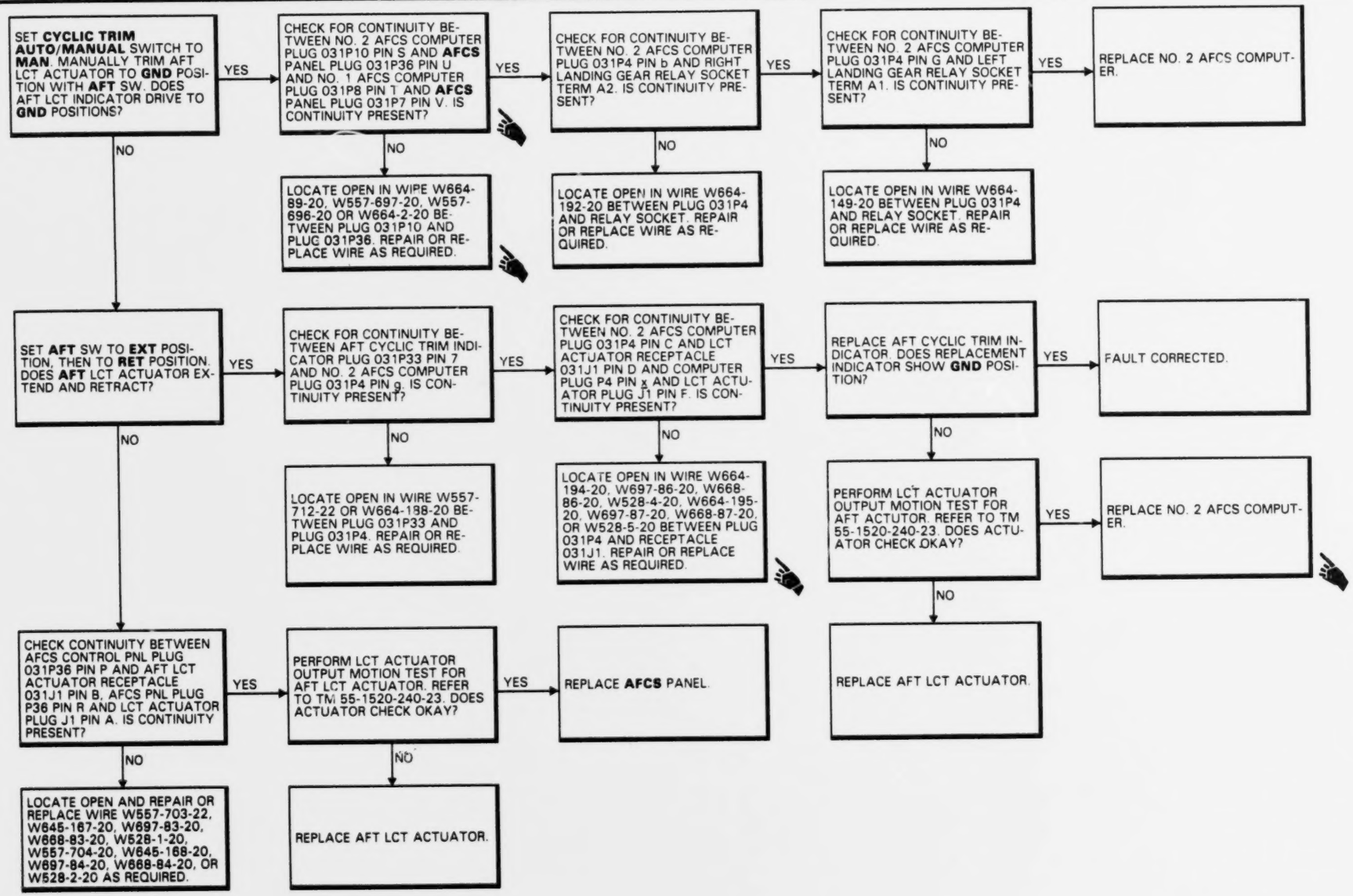
11-3.17 AFT LCT INDICATOR NOT IN GND POSITION (Continued)


SET **CYCLIC TRIM AUTO/MANUAL** SWITCH TO **MAN**. MANUALLY TRIM AFT LCT ACTUATOR TO **GND** POSITION WITH **AFT** SW. DOES AFT LCT INDICATOR DRIVE TO **GND** POSITIONS?
YES
NO
CHECK FOR CONTINUITY BETWEEN NO. 2 AFCS COMPUTER PLUG 031P10 PIN S AND **AFCS** PANEL PLUG 031P36 PIN U AND NO. 1 AFCS COMPUTER PLUG 031P8 PIN T AND **AFCS** PANEL PLUG 031P7 PIN V. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIPE W664-89-20, W557-697-20, W557-696-20 OR W664-2-20 BETWEEN PLUG 031P10 AND PLUG 031P36. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN NO. 2 AFCS COMPUTER PLUG 031P4 PIN b AND RIGHT LANDING GEAR RELAY SOCKET TERM A2. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W664-192-20 BETWEEN PLUG 031P4 AND RELAY SOCKET. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN NO. 2 AFCS COMPUTER PLUG 031P4 PIN G AND LEFT LANDING GEAR RELAY SOCKET TERM A1. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W664-149-20 BETWEEN PLUG 031P4 AND RELAY SOCKET. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE NO. 2 AFCS COMPUTER.
SET **AFT** SW TO **EXT** POSITION, THEN TO **RET** POSITION. DOES **AFT** LCT ACTUATOR EXTEND AND RETRACT?
YES
NO
CHECK FOR CONTINUITY BETWEEN AFT CYCLIC TRIM INDICATOR PLUG 031P33 PIN 7 AND NO. 2 AFCS COMPUTER PLUG 031P4 PIN g. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W557-712-22 OR W664-138-20 BETWEEN PLUG 031P33 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN NO. 2 AFCS COMPUTER PLUG 031P4 PIN C AND LCT ACTUATOR RECEPTACLE 031J1 PIN D AND COMPUTER PLUG P4 PIN x AND LCT ACTUATOR PLUG J1 PIN F. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W664-194-20, W697-86-20, W668-86-20, W528-4-20, W664-195-20, W697-87-20, W668-87-20, OR W528-5-20 BETWEEN PLUG 031P4 AND RECEPTACLE 031J1. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE AFT CYCLIC TRIM INDICATOR. DOES REPLACEMENT INDICATOR SHOW **GND** POSITION?
YES
NO
FAULT CORRECTED.
PERFORM LCT ACTUATOR OUTPUT MOTION TEST FOR AFT ACTUTOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
NO
REPLACE NO. 2 AFCS COMPUTER.
CHECK CONTINUITY BETWEEN AFCS CONTROL PNL PLUG 031P36 PIN P AND AFT LCT ACTUATOR RECEPTACLE 031J1 PIN B, AFCS PNL PLUG P36 PIN R AND LCT ACTUATOR PLUG J1 PIN A. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN AND REPAIR OR REPLACE WIRE W557-703-22, W645-167-20, W697-83-20, W668-83-20, W528-1-20, W557-704-20, W645-168-20, W697-84-20, W668-84-20, OR W528-2-20 AS REQUIRED.
PERFORM LCT ACTUATOR OUTPUT MOTION TEST FOR AFT LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
NO
REPLACE AFT LCT ACTUATOR.
REPLACE **AFCS** PANEL.
REPLACE AFT LCT ACTUATOR.

END OF TASK

11-3.18 NO. 1 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

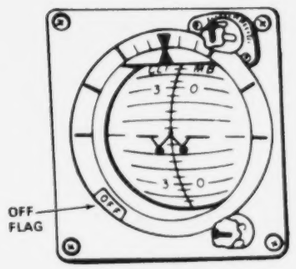
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

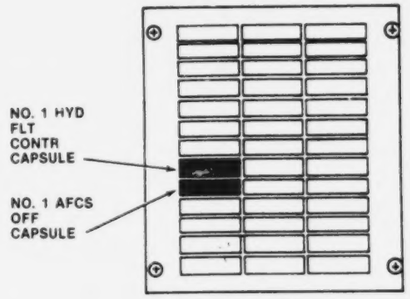
Materials:
None

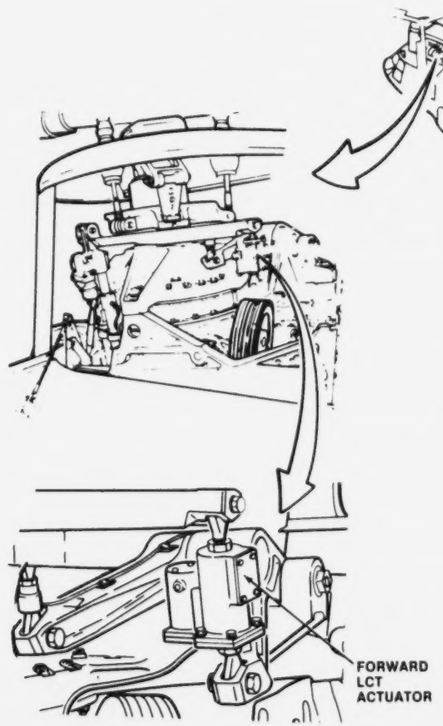
Personnel Required:
Avionic Mechanic (2)

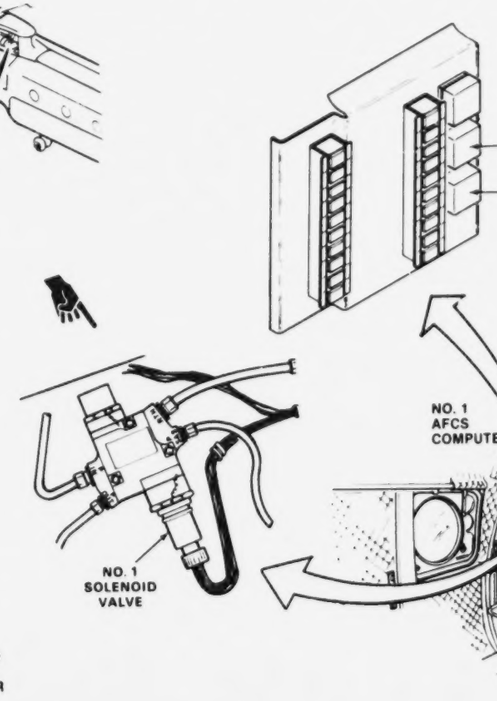
References:
TM 55-1520-240-23
TM 11-1520-240-20

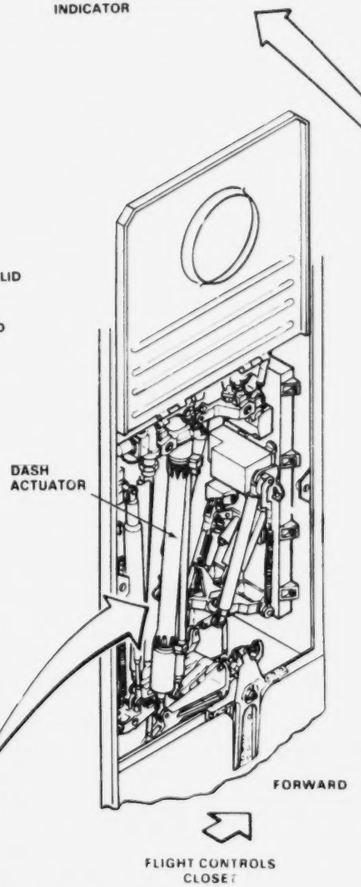
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

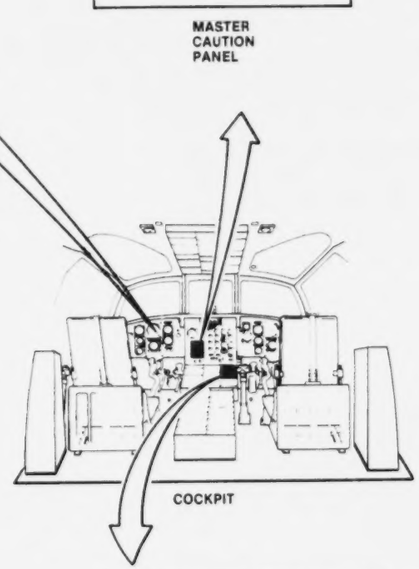


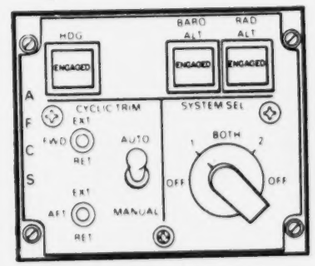












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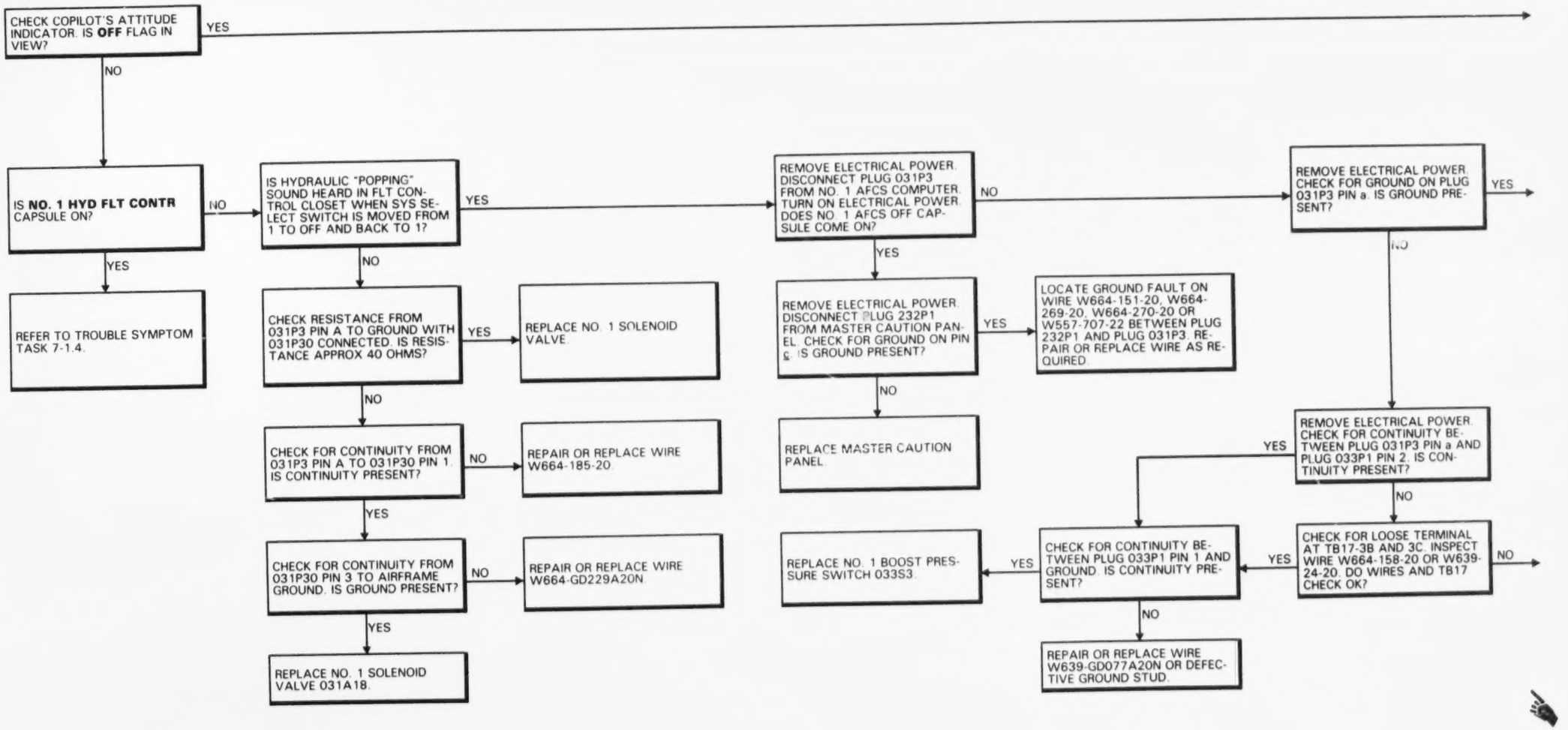
11-3.18 NO. 1 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)


CHECK COPILOT'S ATTITUDE INDICATOR. IS **OFF** FLAG IN VIEW?
YES
NO
IS **NO. 1 HYD FLT CONTR** CAPSULE ON?
NO
YES
REFER TO TROUBLE SYMPTOM TASK 7-1.4.
IS HYDRAULIC "POPPING" SOUND HEARD IN FLT CONTROL CLOSET WHEN SYS SELECT SWITCH IS MOVED FROM 1 TO OFF AND BACK TO 1?
YES
NO
CHECK RESISTANCE FROM 031P3 PIN A TO GROUND WITH 031P30 CONNECTED. IS RESISTANCE APPROX 40 OHMS?
YES
REPLACE NO. 1 SOLENOID VALVE.
NO
CHECK FOR CONTINUITY FROM 031P3 PIN A TO 031P30 PIN 1. IS CONTINUITY PRESENT?
NO
REPAIR OR REPLACE WIRE W664-185-20.
YES
CHECK FOR CONTINUITY FROM 031P30 PIN 3 TO AIRFRAME GROUND. IS GROUND PRESENT?
NO
REPAIR OR REPLACE WIRE W664-GD229A20N.
YES
REPLACE NO. 1 SOLENOID VALVE 031A18.
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. TURN ON ELECTRICAL POWER. DOES NO. 1 AFCS OFF CAPSULE COME ON?
NO
YES
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 232P1 FROM MASTER CAUTION PANEL. CHECK FOR GROUND ON PIN c. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-151-20, W664-269-20, W664-270-20 OR W557-707-22 BETWEEN PLUG 232P1 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE MASTER CAUTION PANEL.
REPLACE NO. 1 BOOST PRESSURE SWITCH 033S3.
YES
CHECK FOR CONTINUITY BETWEEN PLUG 033P1 PIN 1 AND GROUND. IS CONTINUITY PRESENT?
NO
REPAIR OR REPLACE WIRE W639-GD077A20N OR DEFECTIVE GROUND STUD.
REMOVE ELECTRICAL POWER. CHECK FOR GROUND ON PLUG 031P3 PIN a. IS GROUND PRESENT?
YES
NO
REMOVE ELECTRICAL POWER. CHECK FOR CONTINUITY BETWEEN PLUG 031P3 PIN a AND PLUG 033P1 PIN 2. IS CONTINUITY PRESENT?
YES
NO
CHECK FOR LOOSE TERMINAL AT TB17-3B AND 3C. INSPECT WIRE W664-158-20 OR W639-24-20. DO WIRES AND TB17 CHECK OK?
YES
NO

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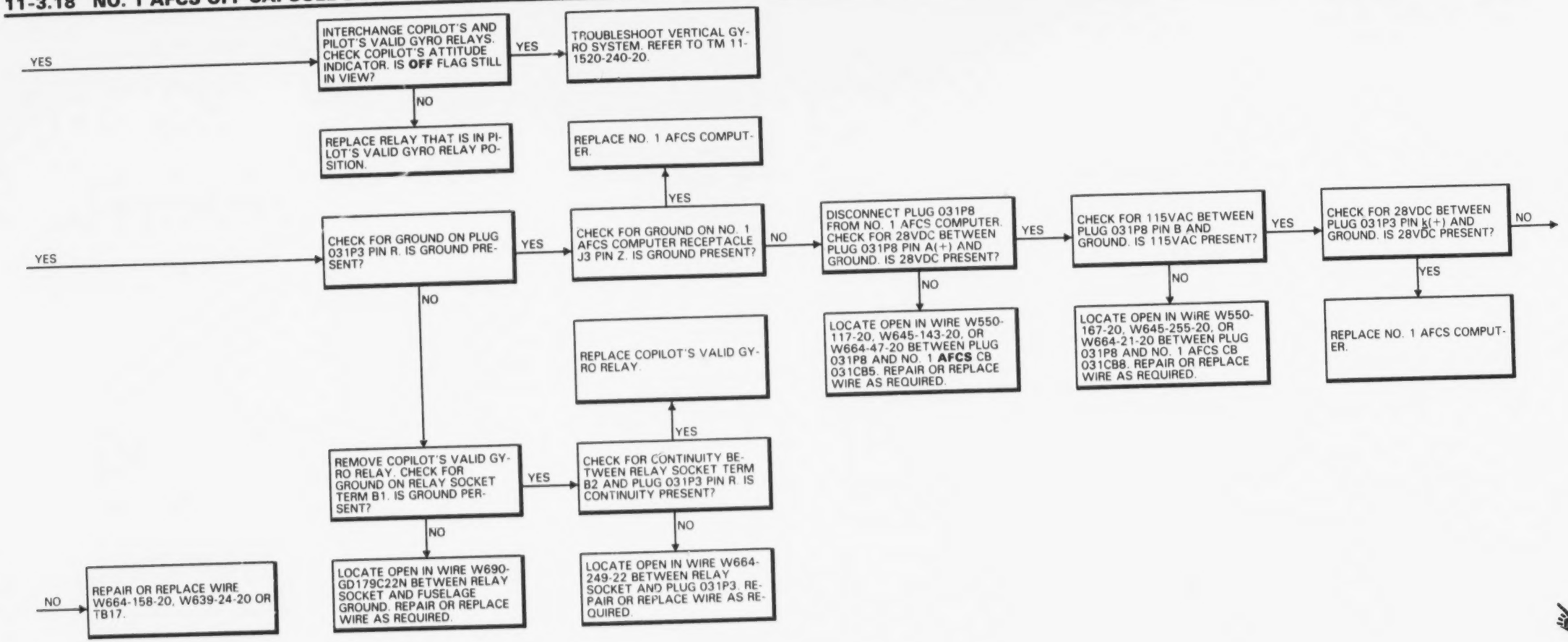
11-3.18 NO. 1 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)


YES
INTERCHANGE COPILOT'S AND PILOT'S VALID GYRO RELAYS. CHECK COPILOT'S ATTITUDE INDICATOR. IS OFF FLAG STILL IN VIEW?
YES
TROUBLESHOOT VERTICAL GYRO SYSTEM. REFER TO TM 11-1520-240-20.
NO
REPLACE RELAY THAT IS IN PILOT'S VALID GYRO RELAY POSITION.
REPLACE NO. 1 AFCS COMPUTER.
YES
YES
CHECK FOR GROUND ON PLUG 031P3 PIN R. IS GROUND PRESENT?
YES
CHECK FOR GROUND ON NO. 1 AFCS COMPUTER RECEPTACLE J3 PIN Z. IS GROUND PRESENT?
NO
DISCONNECT PLUG 031P8 FROM NO. 1 AFCS COMPUTER. CHECK FOR 28VDC BETWEEN PLUG 031P8 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 115VAC BETWEEN PLUG 031P8 PIN B AND GROUND. IS 115VAC PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 031P3 PIN K(+) AND GROUND. IS 28VDC PRESENT?
NO
NO
NO
YES
REPLACE COPILOT'S VALID GYRO RELAY.
LOCATE OPEN IN WIRE W550-117-20, W645-143-20, OR W664-47-20 BETWEEN PLUG 031P8 AND NO. 1 AFCS CB 031CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W550-167-20, W645-255-20, OR W664-21-20 BETWEEN PLUG 031P8 AND NO. 1 AFCS CB 031CB8. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE NO. 1 AFCS COMPUTER.
YES
REMOVE COPILOT'S VALID GYRO RELAY. CHECK FOR GROUND ON RELAY SOCKET TERM B1. IS GROUND PERSENT?
YES
CHECK FOR CONTINUITY BETWEEN RELAY SOCKET TERM B2 AND PLUG 031P3 PIN R. IS CONTINUITY PRESENT?
NO
NO
NO
REPAIR OR REPLACE WIRE W664-158-20, W639-24-20 OR TB17.
LOCATE OPEN IN WIRE W690-GD179C22N BETWEEN RELAY SOCKET AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W664-249-22 BETWEEN RELAY SOCKET AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.

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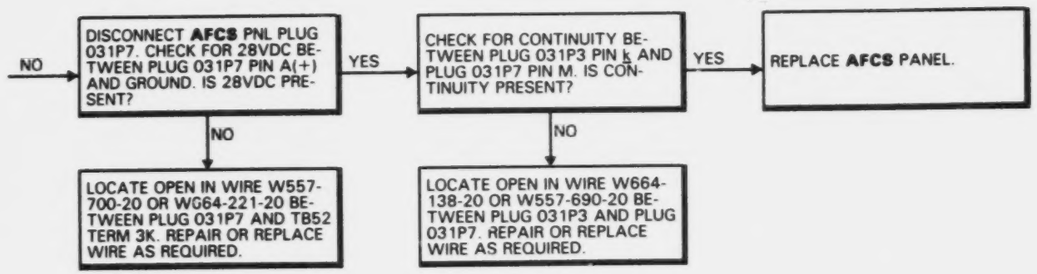
11-3.18 NO. 1 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)


NO
DISCONNECT AFCS PNL PLUG 031P7. CHECK FOR 28VDC BETWEEN PLUG 031P7 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 031P3 PIN k AND PLUG 031P7 PIN M. IS CONTINUITY PRESENT?
YES
REPLACE AFCS PANEL.
NO
LOCATE OPEN IN WIRE W557-700-20 OR WG64-221-20 BETWEEN PLUG 031P7 AND TB52 TERM 3K. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-138-20 OR W557-690-20 BETWEEN PLUG 031P3 AND PLUG 031P7. REPAIR OR REPLACE WIRE AS REQUIRED.

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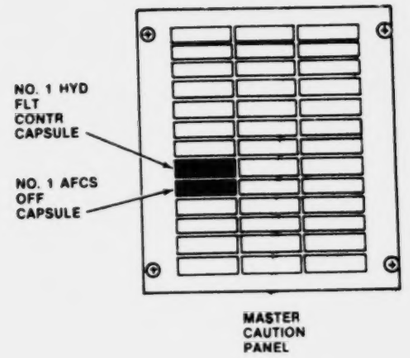
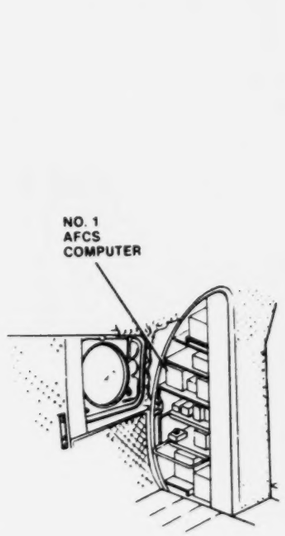
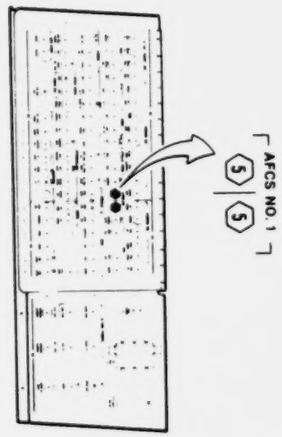
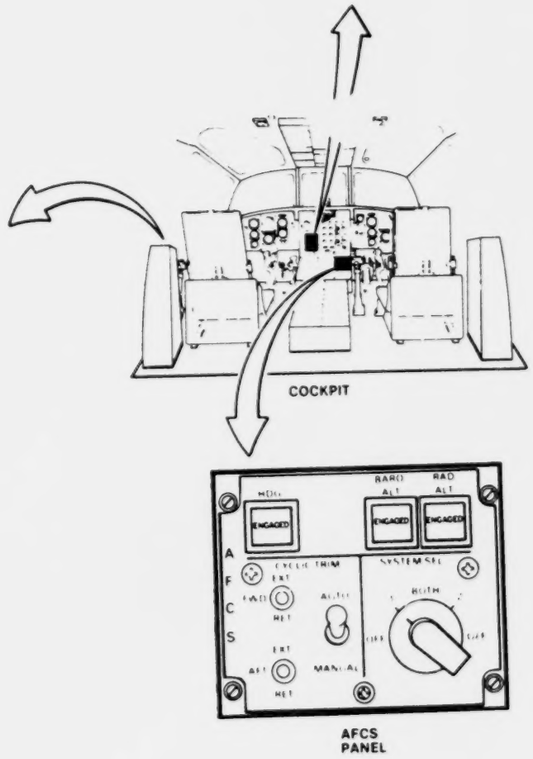
11-3.18 NO. 1 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)









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END OF TASK

11-3.19 NO 1 PITCH ILCA HAS ENGAGE TRANSIENT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

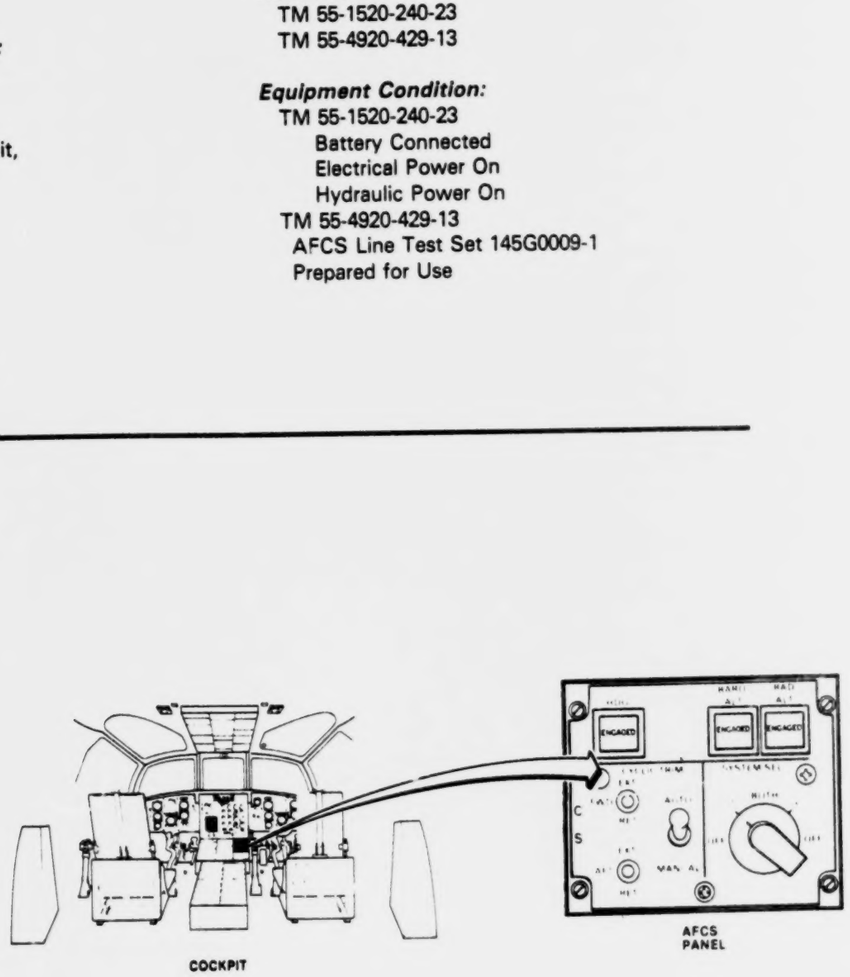
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

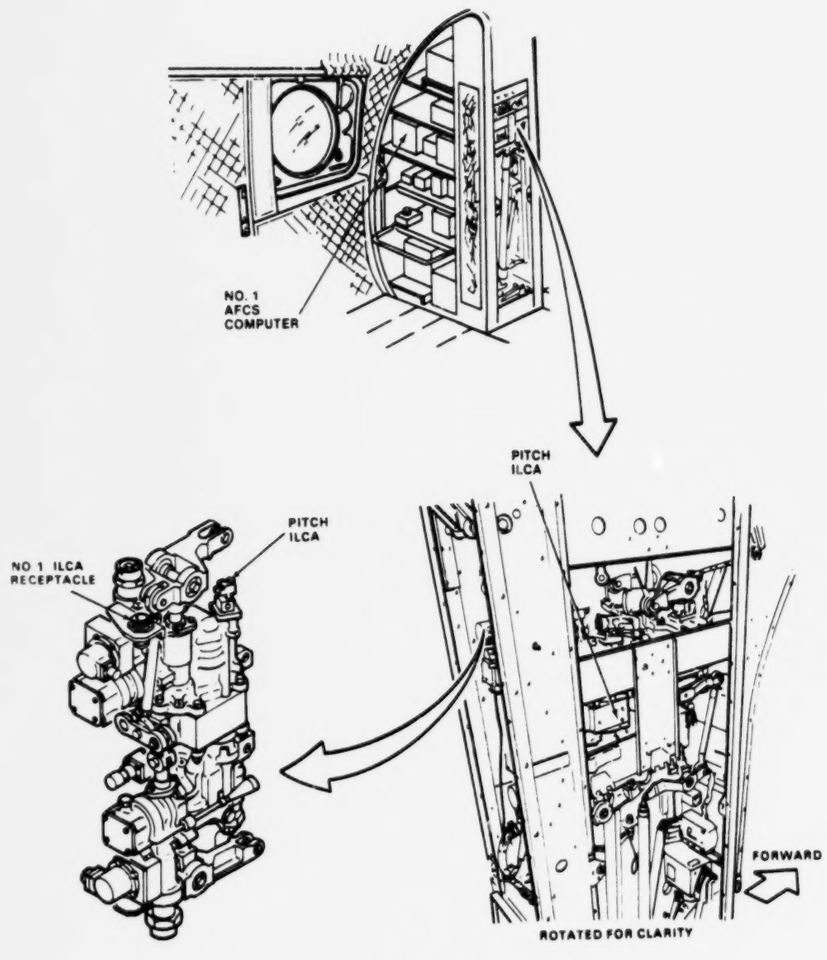
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use





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11-3.19 NO. 1 PITCH ILCA HAS ENGAGE TRANSIENT (Continued)

PERFORM PITCH ILCA NULL TEST. REFER TO TM55-1520-240-23. DOES PITCH ILCA NULL CHECK OKAY?

NO

YES

WAS PITCH ILCA AUTHORITY PHASING TEST PERFORMED BEFORE NULL TEST?

YES

NO

REPLACE NO. 1 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SW POSITION		
A-SELECT SWITCH	B-SELECT SWITCH	RESISTANCE (OHMS)
A-18	B-19	LESS THAN 1100
A-45	B-50	1500 TO 2200
A-11	B-12	LESS THAN 1100
A-13	B-12	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P13 FROM PITCH ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P13 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

CHECK FOR GROUND ON PLUG 031P13 PIN 7. IS GROUND PRESENT?

YES

REPLACE PITCH ILCA.

NO

LOCATE OPEN IN WIRE W664-GD254A20N BETWEEN PLUG 031P13 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-17-20, W664-65-20, W664-24-20, OR W664-64-20 FOR PINS 1 AND 2 OR WIRE W664-22-20, W664-68-20, W664-20-20 OR W664-67-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT PLUG 031P13 FROM PITCH ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P13 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SW POSITIONS		
A-SELECT SWITCH	B-SELECT SWITCH	PLUG 031P13 PINS JUMPERED
A-18	B-19	3 AND 4
A-45	B-50	8 AND 10
A-06	B-07	11 AND 12
A-11	B-12	13 AND 14
A-13	B-12	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE PITCH ILCA.

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 PINS AND PLUG 031P13 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SW POSITION		PLUG 031P8 TO PLUG 031P13 PIN	PIN	WIRE NO.
A-18	B-19	W	3	W664-25-20
		X	4	W664-26-20
A-45	B-50	JJ	10	W664-28-20
		PP	8	W664-27-20
A-11	B-12	L	14	W664-18-20 OR W664-66-20
		M	13	W664-29-20
A-13	B-12	N	14	W664-19-20 OR W664-66-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

11-3.20 NO. 1 ROLL HAS ILCA ENGAGE TRANSIENT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

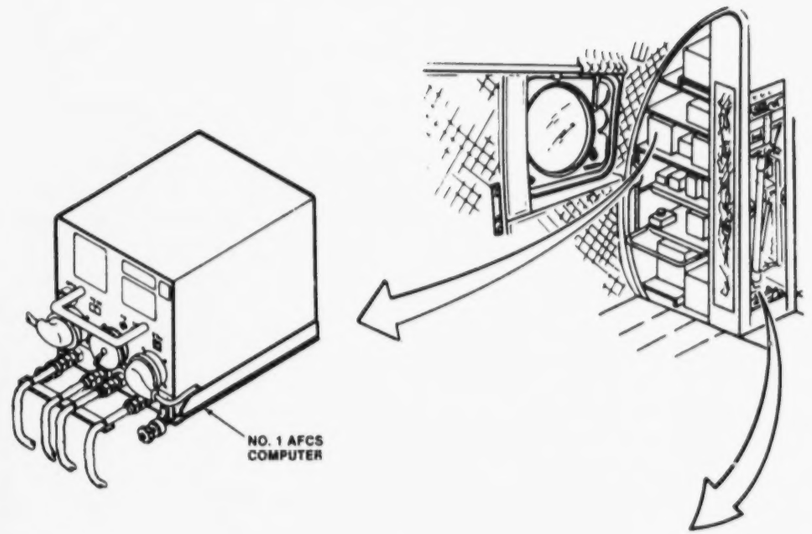
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

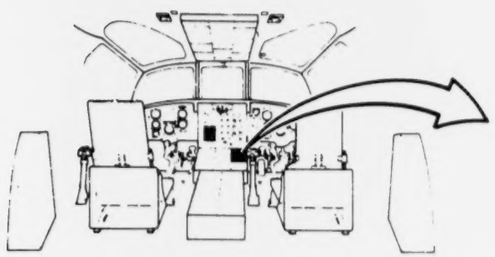
Materials:
None

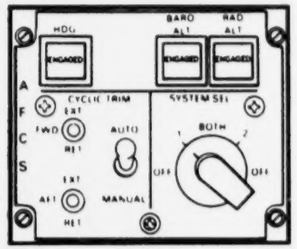
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

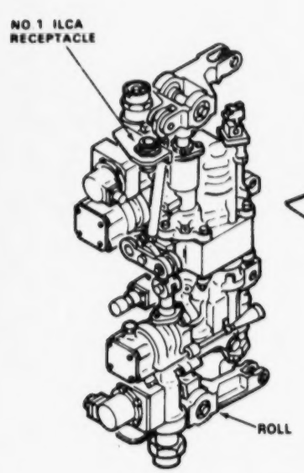
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set Prepared
For Use

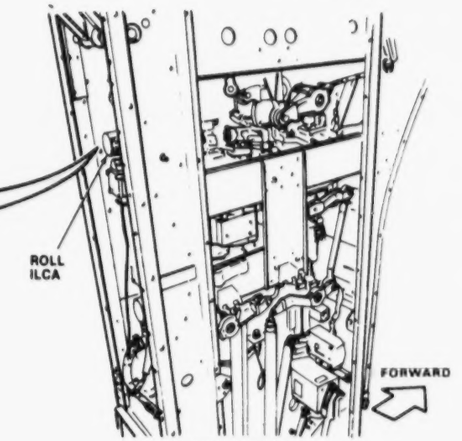






AFCS PANEL





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11-3.20 NO. 1 ROLL ILCA HAS ENGAGE TRANSIENT (Continued)

PERFORM ROLL ILCA NULL TEST. REFER TO TM 55-1520-240-23. DOES ROLL ILCA NULL CHECK OKAY?

NO

YES

WAS ROLL ILCA AUTHORITY PHASING TEST PERFORMED BEFORE NULL TEST?

YES

NO

REPLACE NO. 1 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-34	B-35	LESS THAN 1100
A-49	B-48	1500 TO 2200
A-29	B-30	LESS THAN 1100
A-31	B-30	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P15 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P15 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

CHECK FOR GROUND ON PLUG 031P15 PIN 7. IS GROUND PRESENT?

YES

REPLACE ROLL ILCA

NO

LOCATE OPEN IN WIRE W664-GD254B20N BETWEEN PLUG 031P15 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-17-20, W664-75-20, W664-24-20 OR W664-74-20 FOR PINS 1 AND 2 OR WIRE W664-22-20, W664-73-20, W664-20-20 OR W664-76-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT PLUG 031P15 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P15 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PLUG 031P15 PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-34	B-35	3 AND 4
A-49	B-48	8 AND 10
A-06	B-07	11 AND 12
A-29	B-30	13 AND 14
A-31	B-30	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE ROLL ILCA

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 PINS AND PLUG 031P15 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION	PIN	PLUG 031P8 TO PLUG 031P15 PIN		WIRE NO
A-34	B-35	s	3	W664-37-20
		t	4	W664-38-20
A-49	B-48	NN	10	W664-40-20
		MM	8	W664-39-20
A-29	B-30	j	14	W664-42-20 OR W664-45-20
		k	13	W664-41-20
A-31	B-30	m	14	W664-43-20 OR W664-45-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

11-3.21 NO. 1 YAW ILCA HAS ENGAGE TRANSIENT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

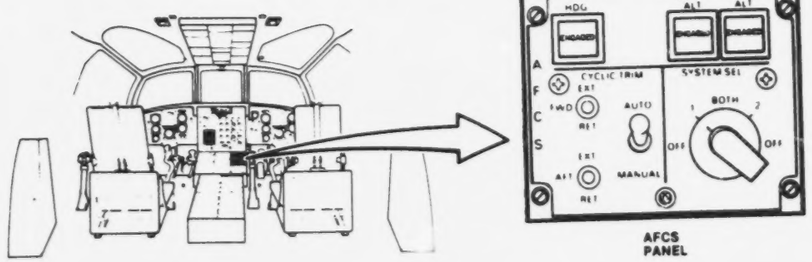
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



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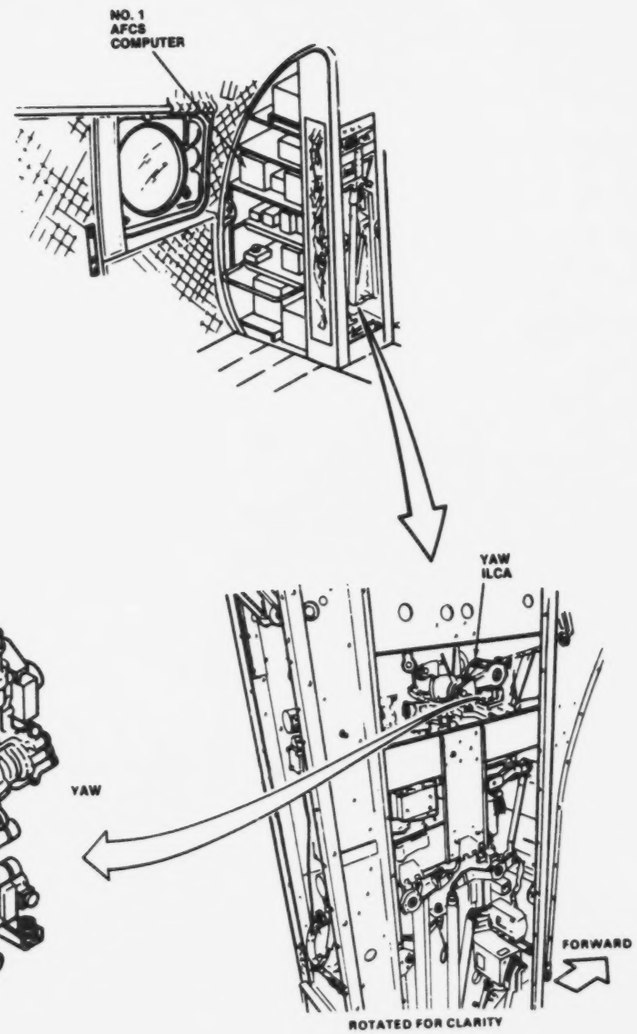

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11-3.21 NO. 1 YAW ILCA HAS ENGAGE TRANSIENT (Continued)

PERFORM YAW ILCA NULL TEST. REFER TO TM 55-1520-240-23. DOES YAW ILCA NULL CHECK OKAY?

NO

YES

WAS YAW ILCA AUTHORITY PHASING TEST PERFORMED BEFORE NULL TEST?

YES

NO

REPLACE NO. 1 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS A-SELECT SWITCH	B-SELECT SWITCH	RESISTANCE (OHMS)
A-42	B-43	LESS THAN 1100
A-44	3-36	1500 TO 2200
A-47	B-46	LESS THAN 1100
A-41	B-46	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P17 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P17 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

CHECK FOR GROUND ON PLUG 031P17 PIN 7. IS GROUND PRESENT?

YES

REPLACE YAW ILCA.

NO

LOCATE OPEN IN WIRE W664-GD228A20N BETWEEN PLUG 031P17 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-17-20, W664-71-20, W664-24-20 OR W664-72-20 FOR PINS 1 AND 2 OR WIRE W664-22-20, W664-69-20, W664-1-20-20 OR W664-70-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT PLUG 031P17 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P17 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS A-SELECT SWITCH	B-SELECT SWITCH	PLUG 031P17 PINS JUMPERED
A-42	B-43	3 AND 4
A-44	B-36	8 AND 10
A-06	B-07	11 AND 12
A-47	B-46	13 AND 14
A-41	B-46	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE YAW ILCA.

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG C31P8 PINS AND PLUG 031P17 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P8 TO PLUG 031P17 PIN	PIN	WIRE NO
A-42	B-43	FF	3	W664-36-20
		GG	4	W664-32-20
A-44	B-36	HH	10	W664-34-20
		♥	8	W664-33-20
A-47	B-46	BB	14	W664-31-20 OR W664-44-20
		KK	13	W664-35-20
A-41	B-46	LL	14	W664-30-20 OR W664-44-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

END OF TASK

11-3.22 NO. 1 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

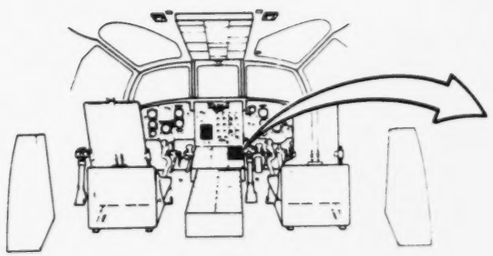
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



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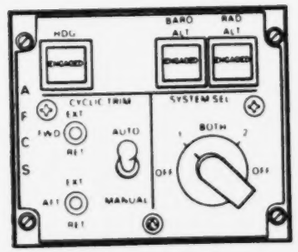

AFCS PANEL

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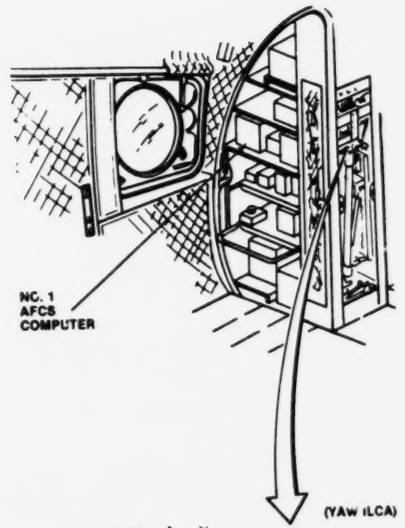

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11-3.22 NO. 1 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED (Continued)

PERFORM YAW ILCA AUTHORITY/PHASING TEST. REFER TO TM 55-1520-240-23. DOES YAW ILCA AUTHORITY/PHASING CHECK OKAY?

YES

NO

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	LESS THAN 1100
A-44	B-36	1500 TO 2200
A-47	B-46	LESS THAN 1100
A-41	B-46	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P17 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P17 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

CHECK FOR GROUND ON PLUG 031P17 PIN 7. IS GROUND PRESENT?

YES

REPLACE YAW ILCA.

NO

LOCATE OPEN IN WIRE W664-17-20, W664-71-20, W664-24-20 OR W664-72-20 FOR PINS 1 AND 2 OR WIRE W664-22-20, W664-69-20, W664-20-20 OR W664-70-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-GD228A20N BETWEEN PLUG 031P17 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT PLUG 031P17 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P17 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PLUG 031P17 PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	3 AND 4
A-44	B-36	8 AND 10
A-06	B-07	11 AND 12
A-47	B-46	13 AND 14
A-41	B-46	13 AND 14

DOES TEST SET METER READ CONTINUITY?

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 AND PLUG 031P17 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P8 TO PLUG 031P17		
		PIN	PIN	WIRE NO
A-42	B-43	FF	3	W664-36-20
		GG	4	W664-32-20
A-44	B-36	HH	10	W664-34-20
		W	8	W664-33-20
A-47	B-46	BB	14	W664-31-20 OR W664-44-20
		KK	13	W664-35-20
A-41	B-46	LL	14	W664-30-20 OR W664-44-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

YES

REPLACE YAW ILCA.

GO TO NEXT PAGE

11-3.22 NO. 1 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED (Continued)

PERFORM DIRECTIONAL (YAW) CPT NULL AND OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES YAW CPT NULL AND OUTPUT TEST CHECK OKAY?

NO

YES

REPLACE NO. 1 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-39	B-38	LESS THAN 200
A-39	B-40	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT YAW CPT PLUG WITH GREEN BAND FROM RECEPTACLE 031J11. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER YAW CPT RECEPTACLE PINS A AND B. DOES TEST SET METER INDICATE CONTINUITY?

YES

CHECK FOR GROUND ON YAW CPT RECEPTACLE PIN F. IS GROUND PRESENT?

YES

REPLACE YAW CPT.

NO

LOCATE OPEN IN WIRE W664-GD329B20N BETWEEN YAW CPT RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-22-20, W664-62-20, W664-20-20 OR W664-63-20 FOR PINS A AND B. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT YAW CPT PLUG WITH GREEN BAND FROM RECEPTACLE 031J11. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN YAW CPT RECEPTACLE PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		YAW CPT RECEPTACLE PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-39	B-38	E AND C
A-39	B-40	E AND D

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE YAW CPT

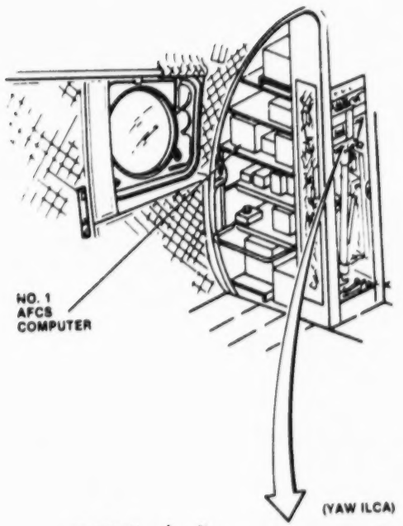
NO

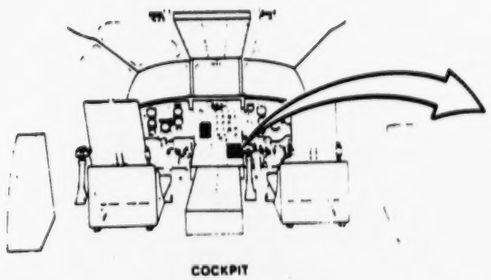
REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 AND YAW CPT RECEPTACLE PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P8 PIN	YAW CPT RECEPTACLE PIN	WIRE NO
A-39	B-38	z	E	W664-16-20
		y	C	W664-15-20
A-39	B-40	z	E	W664-16-20
		AA	D	W664-14-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

11-3.22 NO. 1 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED (Continued)

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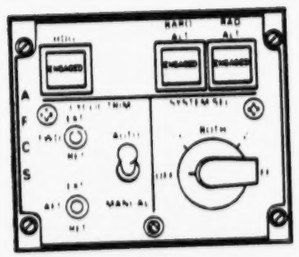
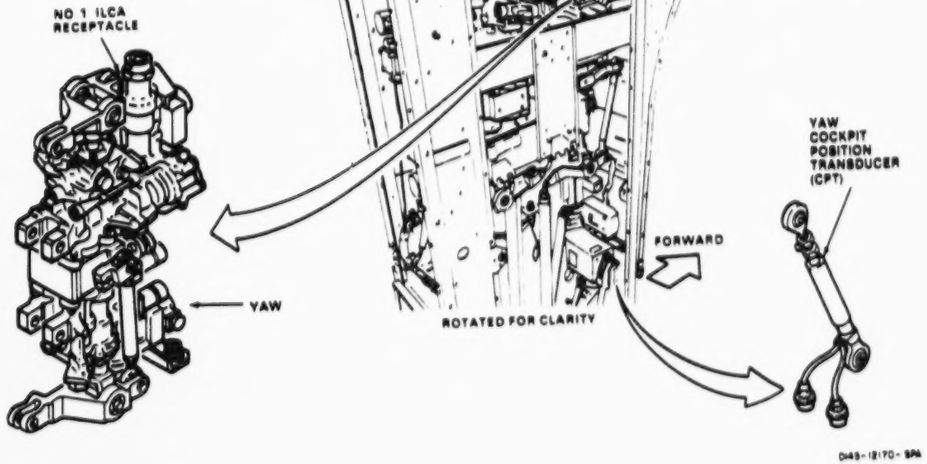


AFCS
PANEL



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END OF TASK

11-3.23 NO. 1 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

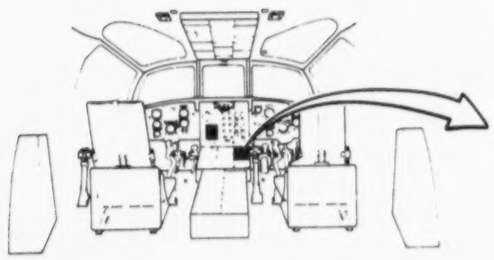
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

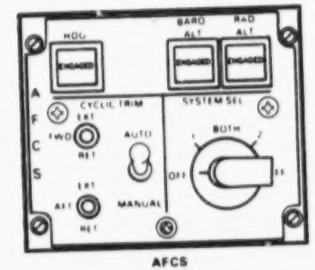
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

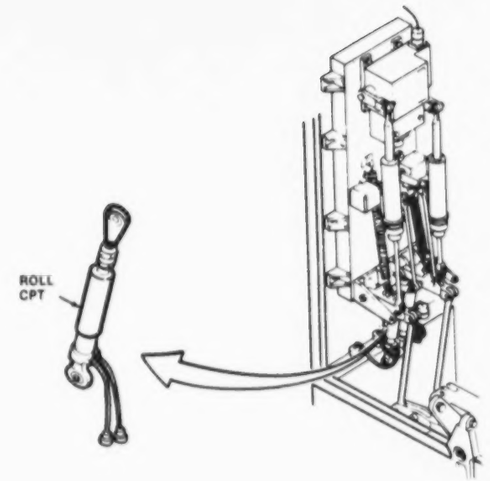
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use

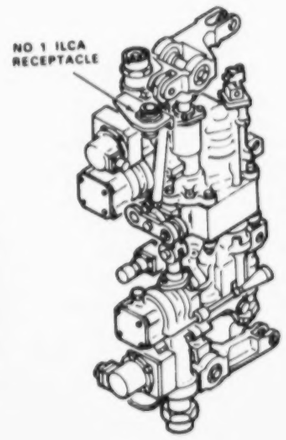




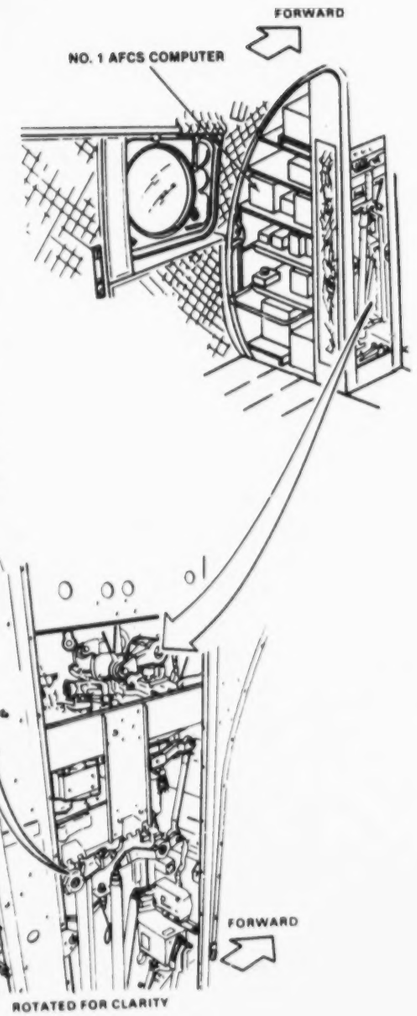
AFCS PANEL

90 x 94





ROLL



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0145 – 11934 – SPA

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11-3.23 NO. 1 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION (Continued)

PERFORM ROLL ILCA AUTHORITY/PHASING TEST. REFER TO TM 55-1520-240-23. DOES ROLL ILCA AUTHORITY/PHASING CHECK OKAY?

YES →

NO ↓

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS A-SELECT SWITCH	B-SELECT SWITCH	RESISTANCE (OHMS)
A-34	B-35	LESS THAN 1100
A-49	B-48	1500 TO 2200
A-29	B-30	LESS THAN 1100
A-31	B-30	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES → REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P15 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P15 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES → CHECK FOR GROUND ON PLUG 031P15 PIN 7. IS GROUND PRESENT?

YES → REPLACE ROLL ILCA

NO ↓

LOCATE OPEN IN WIRE W664-GD334B20N BETWEEN PLUG 031P15 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED

NO ↓

LOCATE OPEN IN WIRE W664-17-20, W664-75-20, W664-24-20 OR W664-74-20 FOR PINS 1 AND 2 OR WIRE W664-22-20, W664-73-20, W664-20-20, OR W664-76-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED

NO ↓

DISCONNECT PLUG 031P15 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P15 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS A-SELECT SWITCH	B-SELECT SWITCH	PLUG 031P15 PINS JUMPERED
A-34	B-35	3 AND 4
A-49	B-48	8 AND 10
A-06	B-07	11 AND 12
A-29	B-30	13 AND 14
A-31	B-30	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES ↓

REPLACE ROLL ILCA.

NO →

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 AND PLUG 031P15 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION A-SELECT SWITCH	B-SELECT SWITCH	PLUG 031P8 TO PLUG 031P15 PIN	PIN	WIRE NO
A-34	B-35	s	3	W664-37-20
		t	4	W664-38-20
A-49	B-48	NN	10	W664-40-20
		MM	8	W664-39-20
A-29	B-30	j	14	W664-42-20 OR W664-45-20
		k	13	W664-41-20
A-31	B-30	m	14	W664-43-20 OR W664-45-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

GO TO NEXT PAGE

11-3.23 NO. 1 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION (Continued)

PERFORM LATERAL (ROLL) CPT NULL AND OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES LATERAL CPT NULL AND OUTPUT TEST CHECK OK?

NO

YES

REPLACE NO. 1 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS.

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-27	B-26	LESS THAN 200
A-27	B-28	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT ROLL CPT PLUG WITH GREEN BAND FROM RECEPTACLE 031J6. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A 06 AND B 07. APPLY ELECTRICAL POWER. JUMPER ROLL CPT RECEPTACLE PINS A AND B. DOES TEST SET METER INDICATE CONTINUITY?

YES

CHECK FOR GROUND ON ROLL CPT PLUG PIN F. IS GROUND PRESENT?

YES

REPLACE LATERAL (ROLL) CPT

NO

LOCATE OPEN IN WIRE W664-22-20, W664-60-20, W664-20-20 OR W664-61-20 FOR PINS A AND B. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W6C*-GD220B20N BETWEEN ROLL CPT RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT ROLL CPT PLUG WITH GREEN BAND FROM RECEPTACLE 031J6. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN ROLL CPT RECEPTACLE PINS FOR THAT POSITION AS FOLLOWS.

SELECT SWITCH POSITIONS		ROLL CPT RECEPTACLE PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-27	B-26	E AND C
A-27	B-28	E AND D

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE ROLL CPT.

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 AND ROLL CPT RECEPTACLE PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS.

SELECT SWITCH POSITION		PLUG 031P8 PIN	ROLL CPT RECEPTACLE PIN	WIRE NO
A-27	B-26	h	E	W664-13-20
		g	D	W664-12-20
A-27	B-28	h	E	W664-13-20
		i	C	W664-11-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

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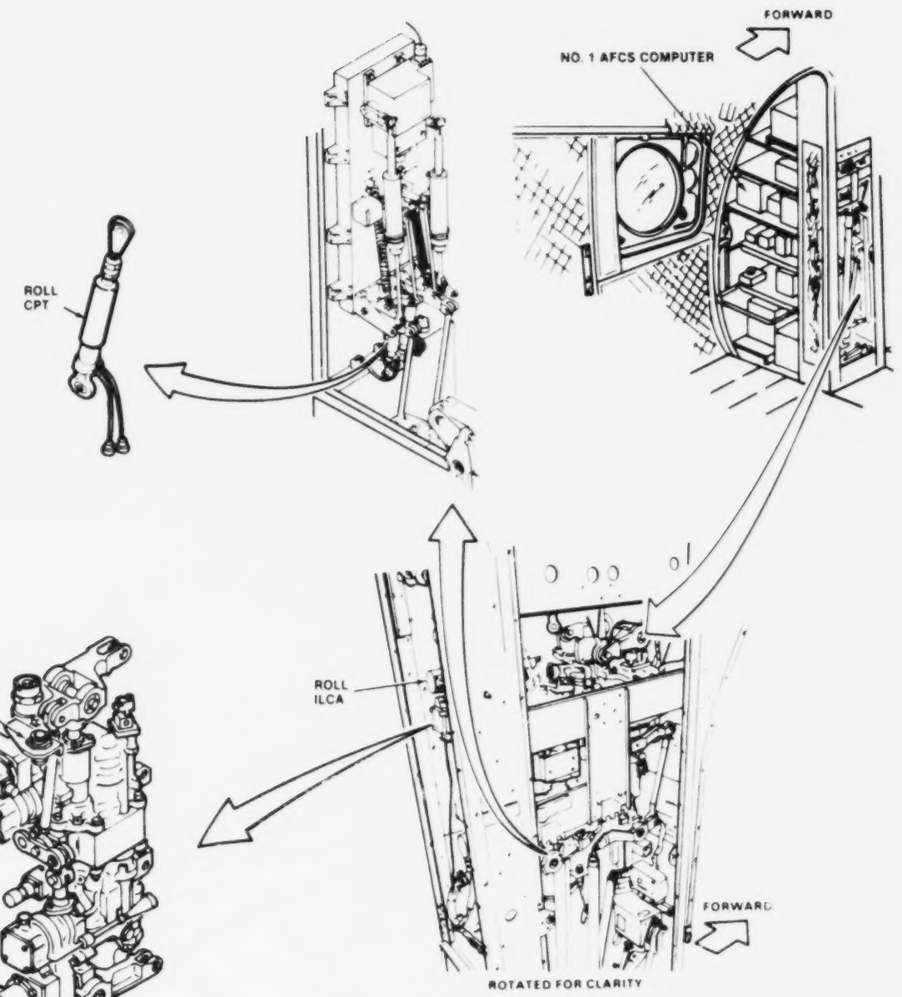
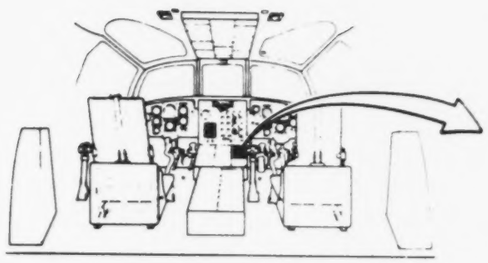
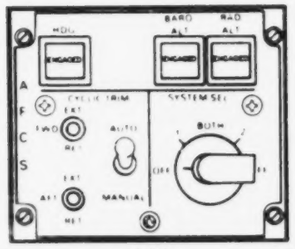
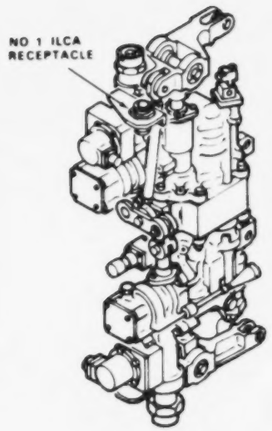
11-3.23 NO. 1 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION (Continued)







AFCS PANEL



ROLL

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90.04

END OF TASK

11-3.24 NO. 1 ROLL ILCA DOES NOT MOVE WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH MOVED RIGHT OR LEFT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

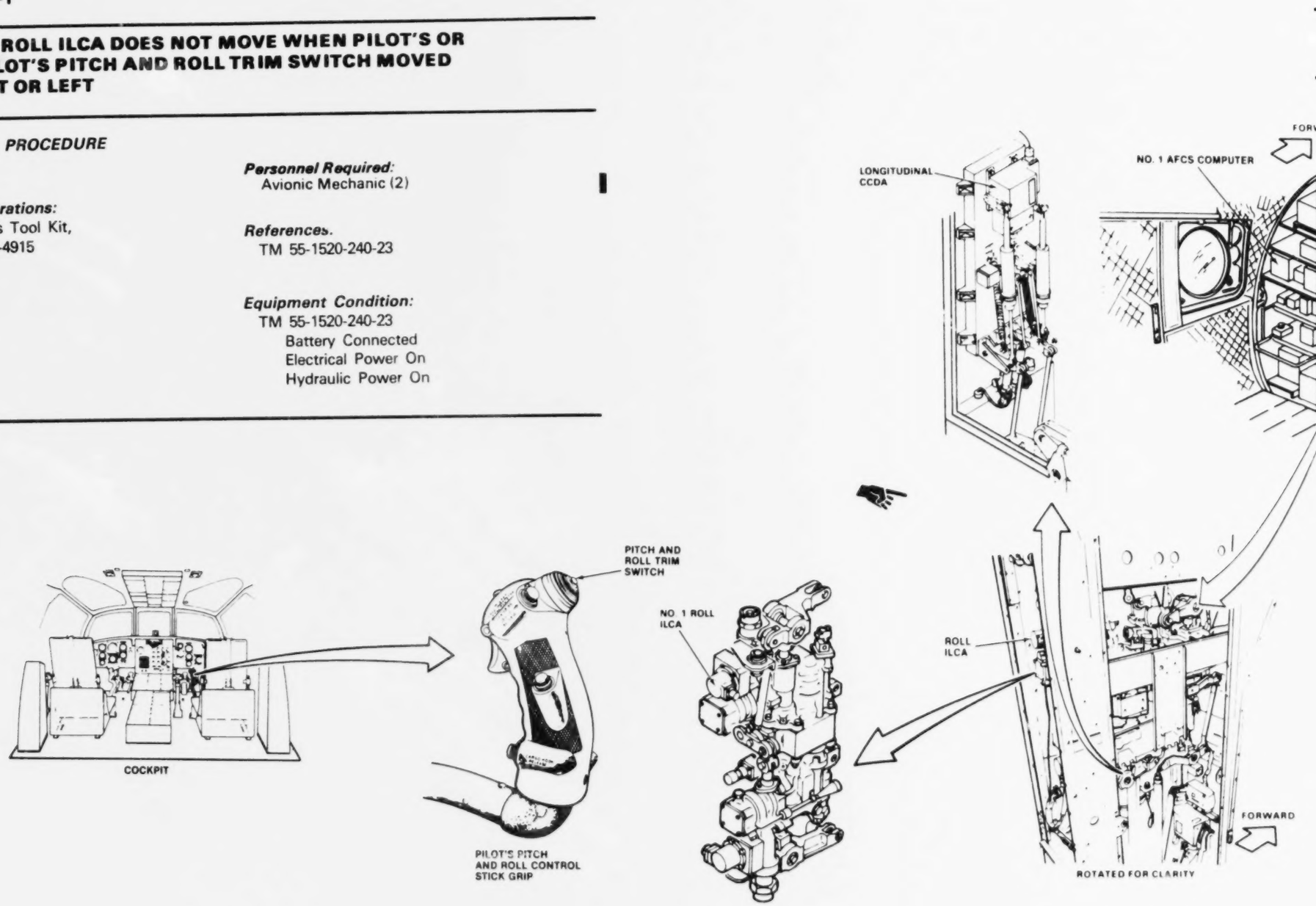
Applicable Configurations:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On



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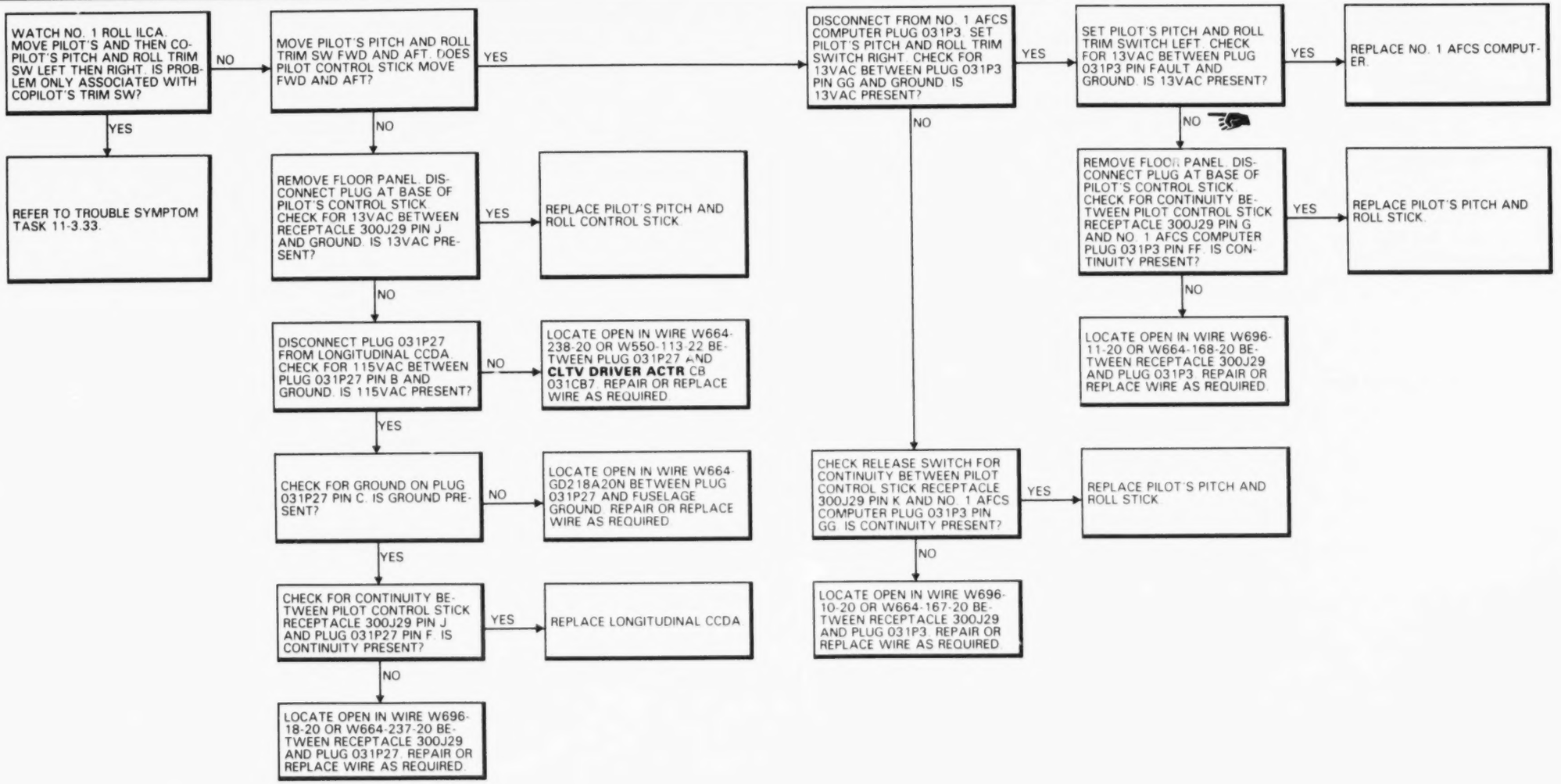
11-3.24 NO. 1 ROLL ILCA DOES NOT MOVE WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH MOVED RIGHT OR LEFT (Continued)


WATCH NO. 1 ROLL ILCA. MOVE PILOT'S AND THEN COPILOT'S PITCH AND ROLL TRIM SW LEFT THEN RIGHT. IS PROBLEM ONLY ASSOCIATED WITH COPILOT'S TRIM SW?
NO
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.33.
MOVE PILOT'S PITCH AND ROLL TRIM SW FWD AND AFT. DOES PILOT CONTROL STICK MOVE FWD AND AFT?
YES
NO
REMOVE FLOOR PANEL. DISCONNECT PLUG AT BASE OF PILOT'S CONTROL STICK. CHECK FOR 13VAC BETWEEN RECEPTACLE 300J29 PIN J AND GROUND. IS 13VAC PRESENT?
YES
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
NO
DISCONNECT PLUG 031P27 FROM LONGITUDINAL CCDA. CHECK FOR 115VAC BETWEEN PLUG 031P27 PIN B AND GROUND. IS 115VAC PRESENT?
NO
LOCATE OPEN IN WIRE W664-238-20 OR W550-113-22 BETWEEN PLUG 031P27 AND CLTV DRIVER ACTR CB 031CB7. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CHECK FOR GROUND ON PLUG 031P27 PIN C. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W664-GD218A20N BETWEEN PLUG 031P27 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
CHECK FOR CONTINUITY BETWEEN PILOT CONTROL STICK RECEPTACLE 300J29 PIN J AND PLUG 031P27 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE LONGITUDINAL CCDA.
NO
LOCATE OPEN IN WIRE W696-18-20 OR W664-237-20 BETWEEN RECEPTACLE 300J29 AND PLUG 031P27. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT FROM NO. 1 AFCS COMPUTER PLUG 031P3. SET PILOT'S PITCH AND ROLL TRIM SWITCH RIGHT. CHECK FOR 13VAC BETWEEN PLUG 031P3 PIN GG AND GROUND. IS 13VAC PRESENT?
YES
NO
CHECK RELEASE SWITCH FOR CONTINUITY BETWEEN PILOT CONTROL STICK RECEPTACLE 300J29 PIN K AND NO. 1 AFCS COMPUTER PLUG 031P3 PIN GG. IS CONTINUITY PRESENT?
YES
REPLACE PILOT'S PITCH AND ROLL STICK.
NO
LOCATE OPEN IN WIRE W696-10-20 OR W664-167-20 BETWEEN RECEPTACLE 300J29 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.
SET PILOT'S PITCH AND ROLL TRIM SWITCH LEFT. CHECK FOR 13VAC BETWEEN PLUG 031P3 PIN FAULT AND GROUND. IS 13VAC PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REMOVE FLOOR PANEL. DISCONNECT PLUG AT BASE OF PILOT'S CONTROL STICK. CHECK FOR CONTINUITY BETWEEN PILOT CONTROL STICK RECEPTACLE 300J29 PIN G AND NO. 1 AFCS COMPUTER PLUG 031P3 PIN FF. IS CONTINUITY PRESENT?
YES
REPLACE PILOT'S PITCH AND ROLL STICK.
NO
LOCATE OPEN IN WIRE W696-11-20 OR W664-168-20 BETWEEN RECEPTACLE 300J29 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.25 AFCS BITE OPERATES WITH ENGINE CONDITION LEVER IN FLIGHT POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

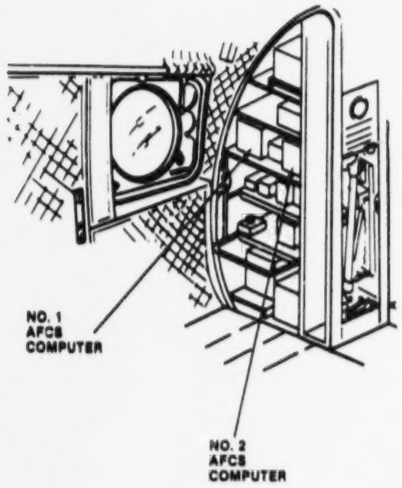
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On



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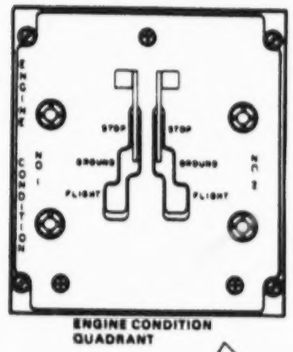
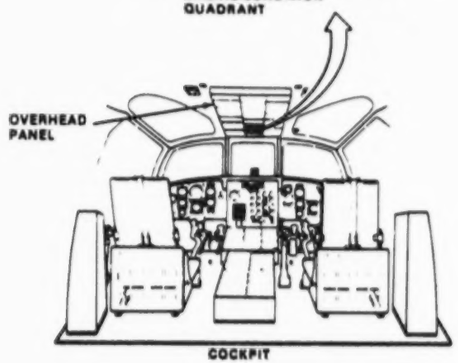


ENGINE CONDITION
QUADRANT



COCKPIT

D148-11533-SP4

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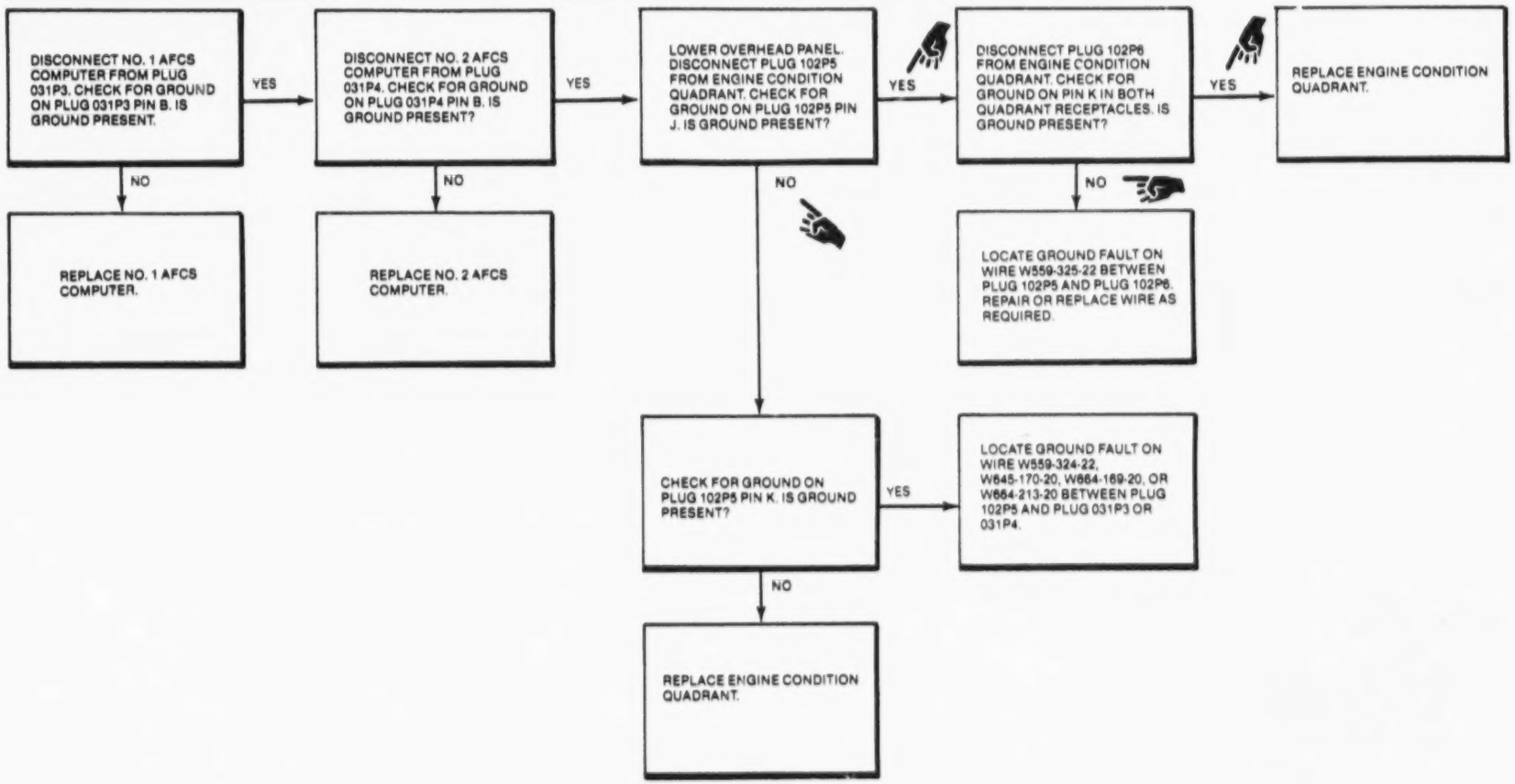
11-3.25 AFCS BITE OPERATES WITH ENGINE CONDITION LEVER IN FLIGHT POSITION (Continued)


DISCONNECT NO. 1 AFCS COMPUTER FROM PLUG 031P3. CHECK FOR GROUND ON PLUG 031P3 PIN B. IS GROUND PRESENT.
YES
DISCONNECT NO. 2 AFCS COMPUTER FROM PLUG 031P4. CHECK FOR GROUND ON PLUG 031P4 PIN B. IS GROUND PRESENT?
YES
LOWER OVERHEAD PANEL. DISCONNECT PLUG 102P5 FROM ENGINE CONDITION QUADRANT. CHECK FOR GROUND ON PLUG 102P5 PIN J. IS GROUND PRESENT?
YES
DISCONNECT PLUG 102P6 FROM ENGINE CONDITION QUADRANT. CHECK FOR GROUND ON PIN K IN BOTH QUADRANT RECEPTACLES. IS GROUND PRESENT?
YES
REPLACE ENGINE CONDITION QUADRANT.
NO
REPLACE NO. 1 AFCS COMPUTER.
NO
REPLACE NO. 2 AFCS COMPUTER.
NO
LOCATE GROUND FAULT ON WIRE W559-325-22 BETWEEN PLUG 102P5 AND PLUG 102P6. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 102P5 PIN K. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-324-22, W645-170-20, W664-169-20, OR W664-213-20 BETWEEN PLUG 102P5 AND PLUG 031P3 OR 031P4.
NO
REPLACE ENGINE CONDITION QUADRANT.

END OF TASK

11-3.26 NO. 1 AFCS COMPUTER BITE SWITCH DOES NOT LIGHT AND COUNTER DOES NOT STEP WHEN BITE SWITCH IS PRESSED AND RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

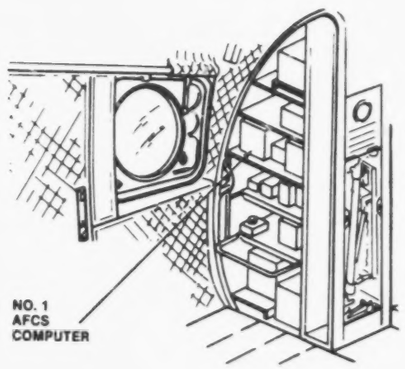
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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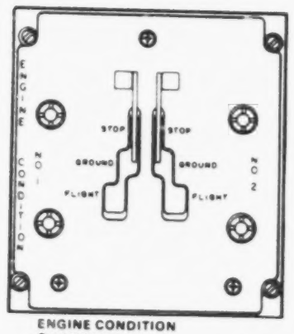
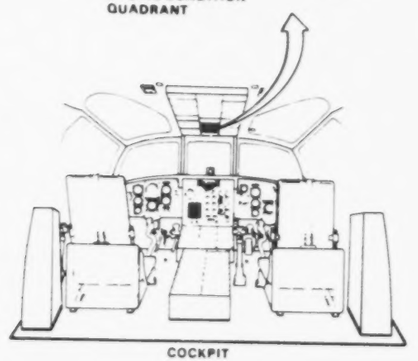


ENGINE CONDITION
QUADRANT



COCKPIT

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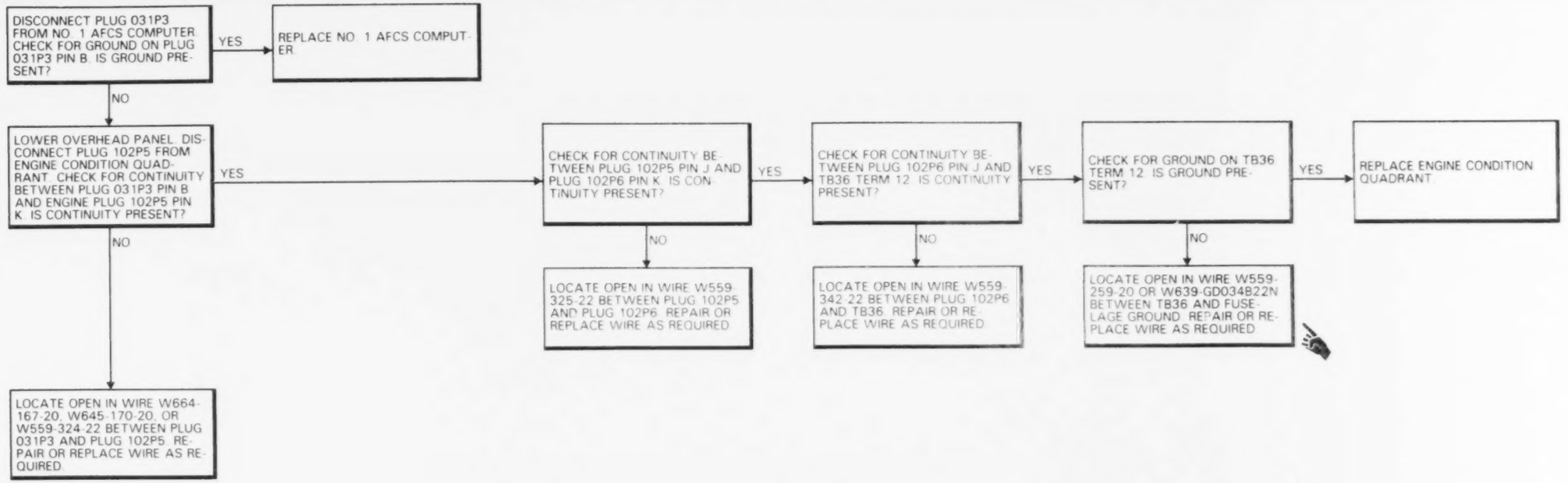
11-3.26 NO. 1 AFCS COMPUTER BITE SWITCH DOES NOT LIGHT AND COUNTER DOES NOT STEP WHEN BITE SWITCH IS PRESSED AND RELEASED (Continued)


DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. CHECK FOR GROUND ON PLUG 031P3 PIN B. IS GROUND PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
LOWER OVERHEAD PANEL. DISCONNECT PLUG 102P5 FROM ENGINE CONDITION QUADRANT. CHECK FOR CONTINUITY BETWEEN PLUG 031P3 PIN B AND ENGINE PLUG 102P5 PIN K. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W664-167-20, W645-170-20, OR W559-324-22 BETWEEN PLUG 031P3 AND PLUG 102P5. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 102P5 PIN J AND PLUG 102P6 PIN K. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-325-22 BETWEEN PLUG 102P5 AND PLUG 102P6. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 102P6 PIN J AND TB36 TERM 12. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-342-22 BETWEEN PLUG 102P6 AND TB36. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON TB36 TERM 12. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-259-20 OR W639-GD034B22N BETWEEN TB36 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE ENGINE CONDITION QUADRANT.

END OF TASK

11-3.27 NO. 2 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED 11-3.27

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

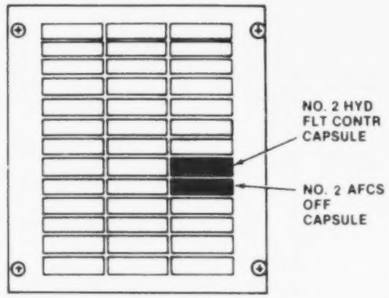
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

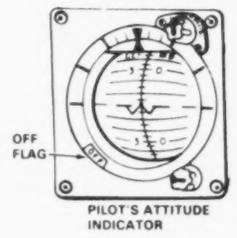
Materials:
None

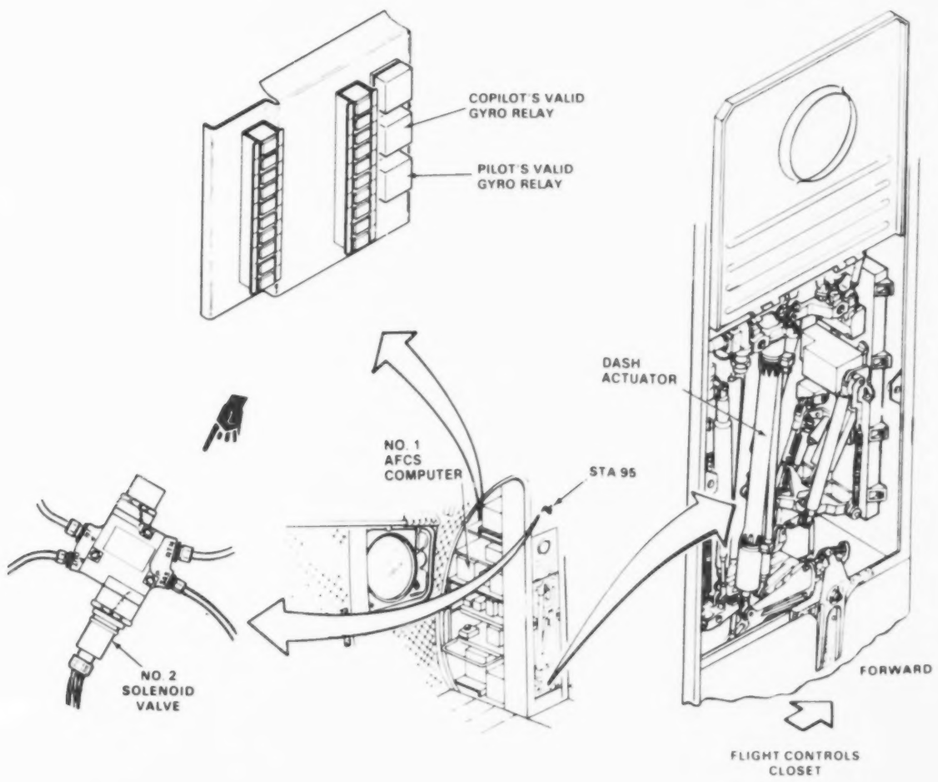
Personnel Required:
Avionic Mechanic (2)

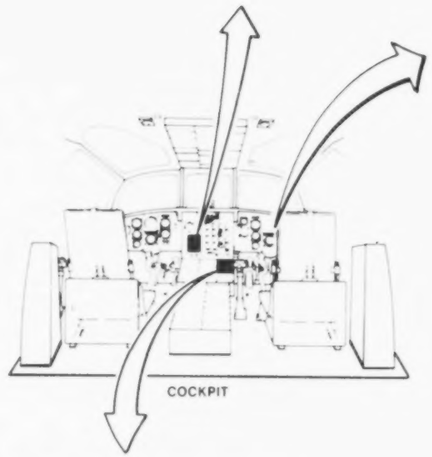
References:
TM 55-1520-240-23
TM 11-1520-240-20

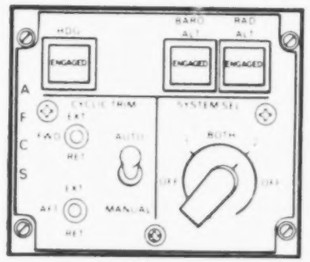
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

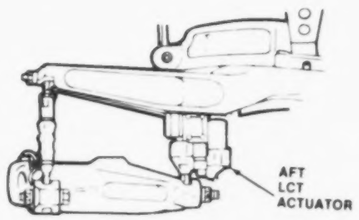












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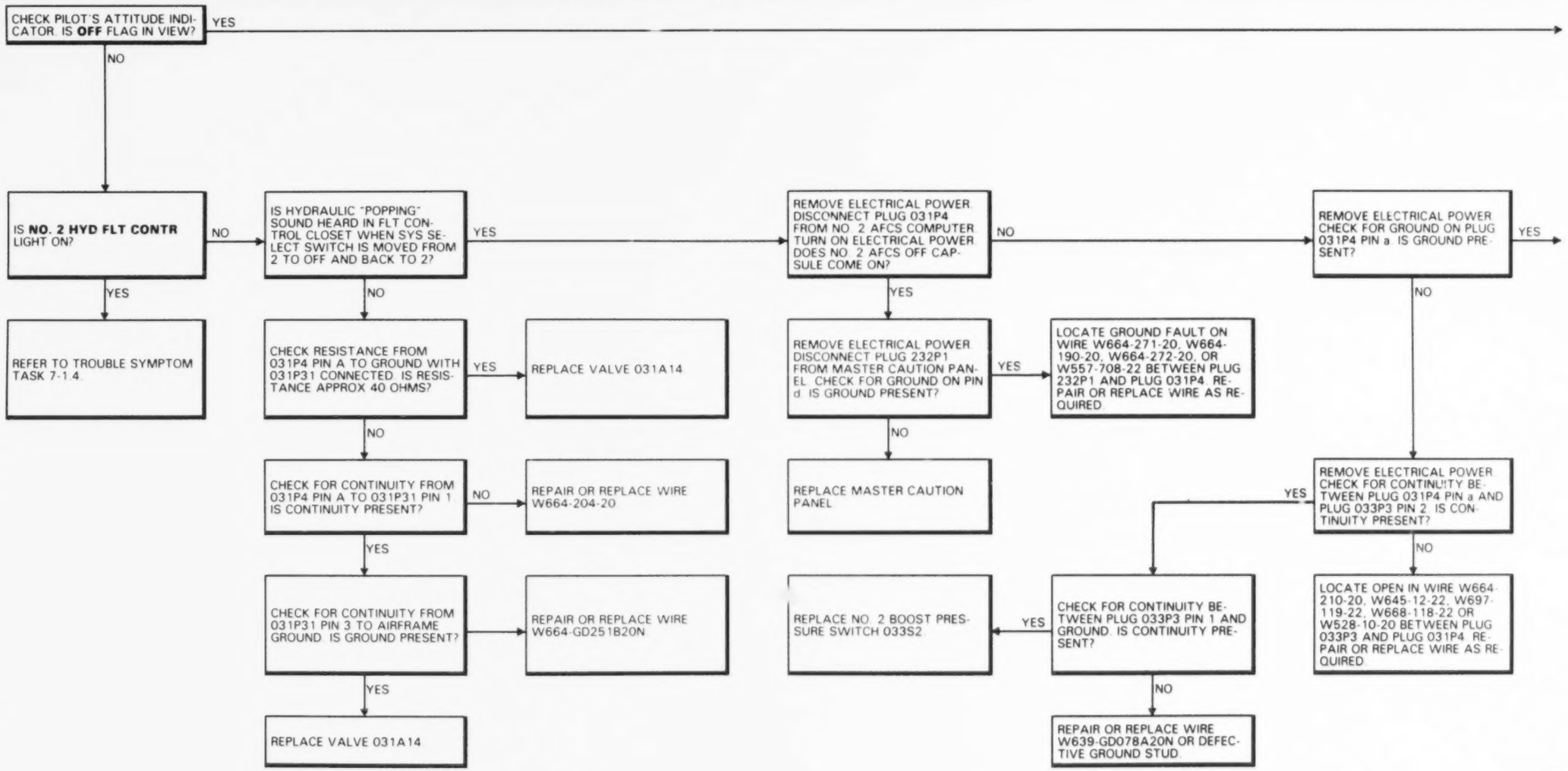
11-3.27 NO. 2 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)


CHECK PILOT'S ATTITUDE INDICATOR. IS **OFF** FLAG IN VIEW?
YES
NO
IS **NO. 2 HYD FLT CONTR** LIGHT ON?
NO
YES
REFER TO TROUBLE SYMPTOM TASK 7-1.4.
IS HYDRAULIC "POPPING" SOUND HEARD IN FLT CONTROL CLOSET WHEN SYS SELECT SWITCH IS MOVED FROM 2 TO OFF AND BACK TO 2?
YES
NO
CHECK RESISTANCE FROM 031P4 PIN A TO GROUND WITH 031P31 CONNECTED. IS RESISTANCE APPROX 40 OHMS?
YES
REPLACE VALVE 031A14
NO
CHECK FOR CONTINUITY FROM 031P4 PIN A TO 031P31 PIN 1. IS CONTINUITY PRESENT?
NO
REPAIR OR REPLACE WIRE W664-204-20
YES
CHECK FOR CONTINUITY FROM 031P31 PIN 3 TO AIRFRAME GROUND. IS GROUND PRESENT?
REPAIR OR REPLACE WIRE W664-GD251B20N
YES
REPLACE VALVE 031A14
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P4 FROM NO. 2 AFCS COMPUTER. TURN ON ELECTRICAL POWER. DOES NO. 2 AFCS OFF CAPSULE COME ON?
NO
YES
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 232P1 FROM MASTER CAUTION PANEL. CHECK FOR GROUND ON PIN d. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W664-271-20, W664-190-20, W664-272-20, OR W557-708-22 BETWEEN PLUG 232P1 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE MASTER CAUTION PANEL
REMOVE ELECTRICAL POWER. CHECK FOR GROUND ON PLUG 031P4 PIN a. IS GROUND PRESENT?
YES
NO
REMOVE ELECTRICAL POWER. CHECK FOR CONTINUITY BETWEEN PLUG 031P4 PIN a AND PLUG 033P3 PIN 2. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W664-210-20, W645-12-22, W697-119-22, W668-118-22 OR W528-10-20 BETWEEN PLUG 033P3 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 033P3 PIN 1 AND GROUND. IS CONTINUITY PRESENT?
YES
NO
REPLACE NO. 2 BOOST PRESSURE SWITCH 033S2.
REPAIR OR REPLACE WIRE W639-GD078A20N OR DEFECTIVE GROUND STUD.

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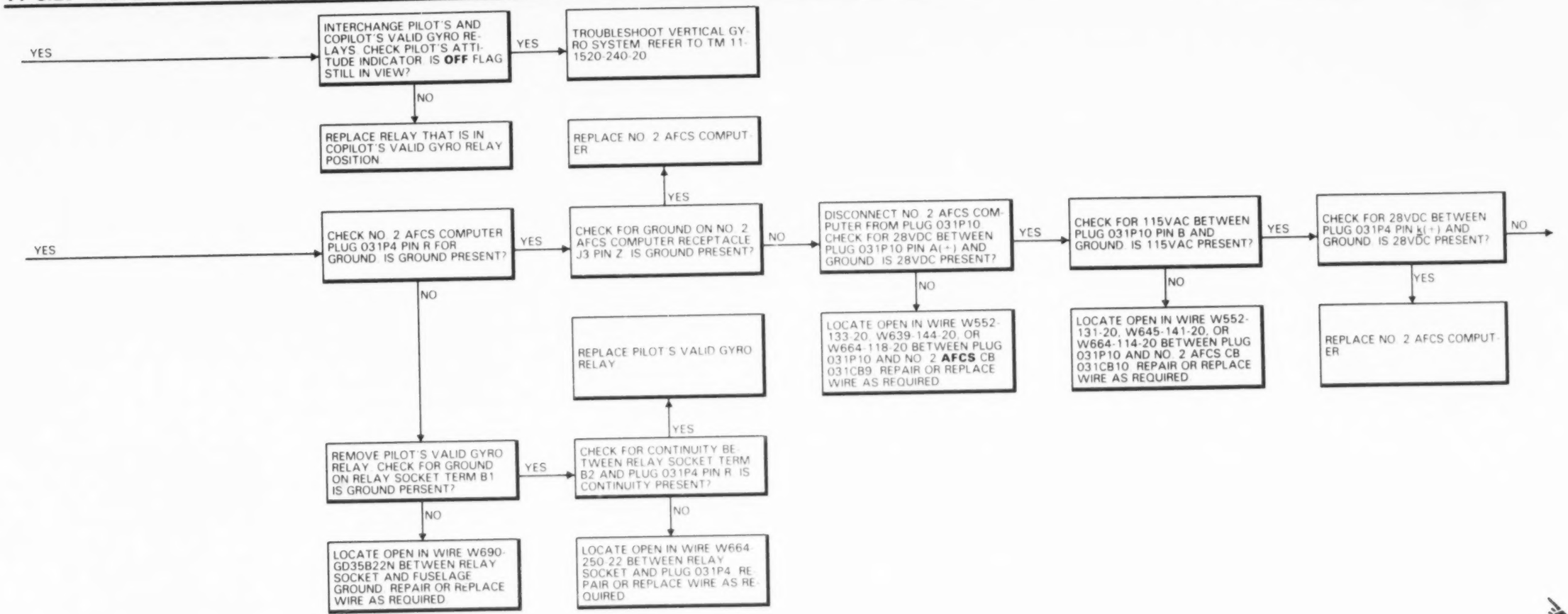
11-3.27 NO. 2 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)


YES
INTERCHANGE PILOT'S AND COPILOT'S VALID GYRO RELAYS. CHECK PILOT'S ATTITUDE INDICATOR IS **OFF** FLAG STILL IN VIEW?
YES
TROUBLESHOOT VERTICAL GYRO SYSTEM. REFER TO TM 11-1520-240-20
NO
REPLACE RELAY THAT IS IN COPILOT'S VALID GYRO RELAY POSITION
REPLACE NO. 2 AFCS COMPUTER
YES
YES
CHECK NO. 2 AFCS COMPUTER PLUG 031P4 PIN R FOR GROUND. IS GROUND PRESENT?
YES
CHECK FOR GROUND ON NO. 2 AFCS COMPUTER RECEPTACLE J3 PIN Z. IS GROUND PRESENT?
NO
DISCONNECT NO. 2 AFCS COMPUTER FROM PLUG 031P10. CHECK FOR 28VDC BETWEEN PLUG 031P10 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 115VAC BETWEEN PLUG 031P10 PIN B AND GROUND. IS 115VAC PRESENT?
YES
CHECK FOR 28VDC BETWEEN PLUG 031P4 PIN K(+) AND GROUND. IS 28VDC PRESENT?
NO
NO
NO
NO
YES
YES
REPLACE PILOT'S VALID GYRO RELAY
LOCATE OPEN IN WIRE W552-133-20, W639-144-20, OR W664-118-20 BETWEEN PLUG 031P10 AND NO. 2 **AFCS** CB 031CB9. REPAIR OR REPLACE WIRE AS REQUIRED
LOCATE OPEN IN WIRE W552-131-20, W645-141-20, OR W664-114-20 BETWEEN PLUG 031P10 AND NO. 2 AFCS CB 031CB10. REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE NO. 2 AFCS COMPUTER
YES
REMOVE PILOT'S VALID GYRO RELAY. CHECK FOR GROUND ON RELAY SOCKET TERM B1 IS GROUND PERSENT?
YES
CHECK FOR CONTINUITY BETWEEN RELAY SOCKET TERM B2 AND PLUG 031P4 PIN R. IS CONTINUITY PRESENT?
NO
NO
LOCATE OPEN IN WIRE W690-GD35B22N BETWEEN RELAY SOCKET AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
LOCATE OPEN IN WIRE W664-250-22 BETWEEN RELAY SOCKET AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED

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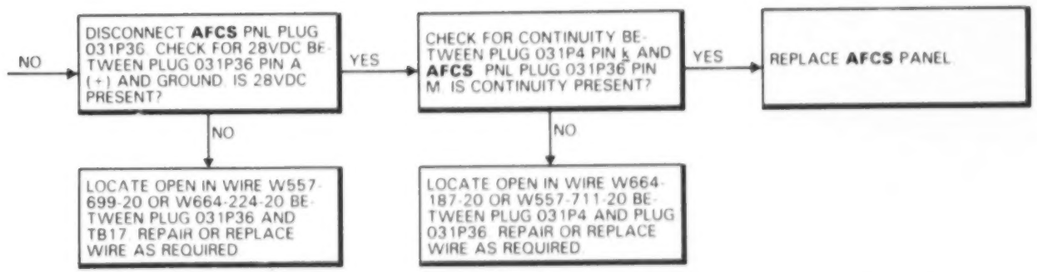
11-3.27 NO. 2 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)


NO
DISCONNECT **AFCS** PNL PLUG 031P36. CHECK FOR 28VDC BETWEEN PLUG 031P36 PIN A (+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 031P4 PIN K AND **AFCS** PNL PLUG 031P36 PIN M. IS CONTINUITY PRESENT?
YES
REPLACE **AFCS** PANEL
NO
LOCATE OPEN IN WIRE W557-699-20 OR W664-224-20 BETWEEN PLUG 031P36 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-187-20 OR W557-711-20 BETWEEN PLUG 031P4 AND PLUG 031P36. REPAIR OR REPLACE WIRE AS REQUIRED.

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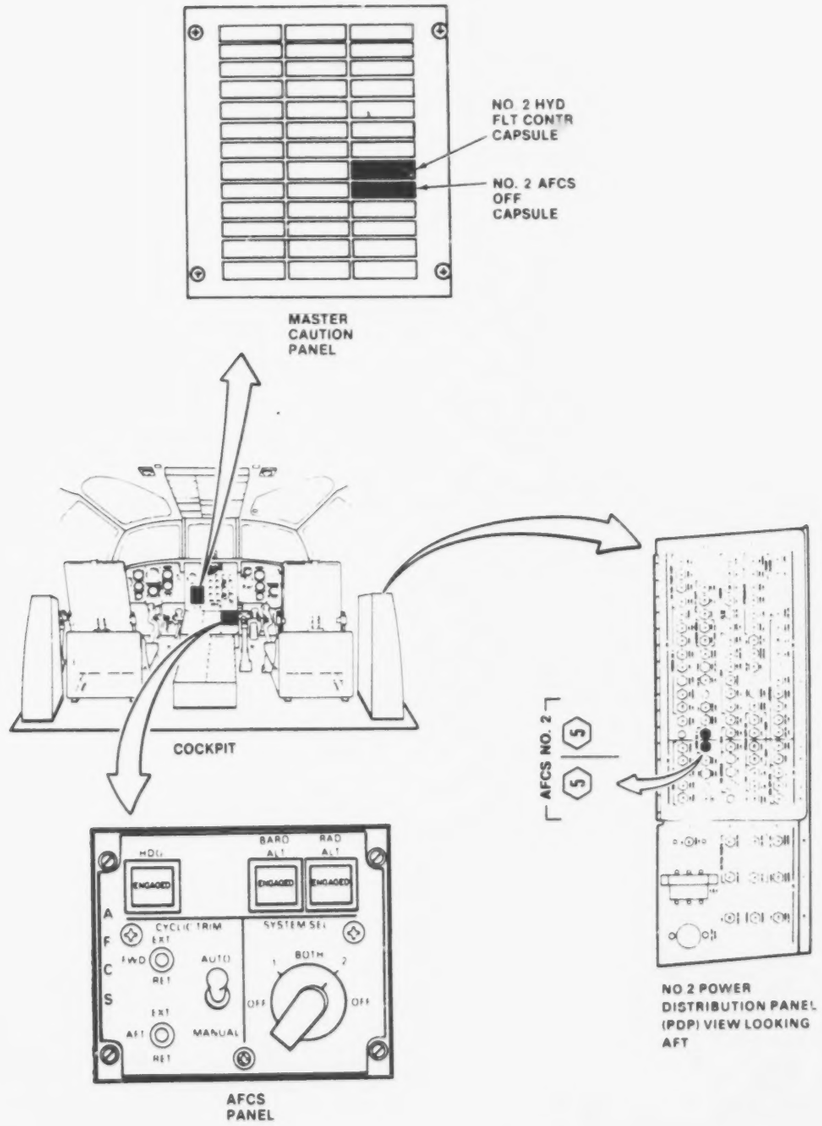
11-3.27 NO. 2 AFCS OFF CAPSULE DOES NOT GO OUT WHEN SYSTEM SELECTED (Continued)



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END OF TASK

11-3.28 NO. 2 PITCH ILCA HAS ENGAGE TRANSIENT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

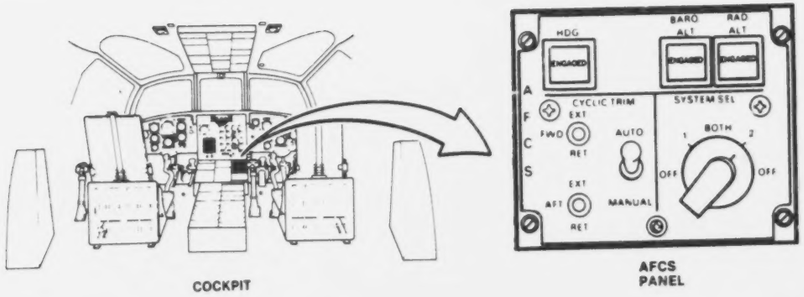
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



COCKPIT

AFCS PANEL

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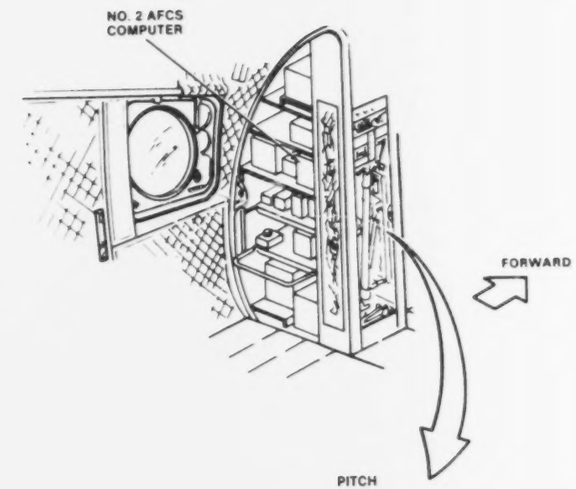

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11-3.28 NO. 2 PITCH ILCA HAS ENGAGE TRANSIENT (Continued)

PERFORM PITCH ILCA NULL TEST. REFER TO TM 55-1520-240-23. DOES PITCH ILCA NULL CHECK OKAY?

NO

YES

WAS PITCH ILCA AUTHORITY PHASING TEST PERFORMED BEFORE THE NULL TEST?

YES

NO

REPLACE NO. 2 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-18	B-19	LESS THAN 1100
A-45	B-50	1500 TO 2200
A-11	B-12	LESS THAN 1100
A-13	B-12	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P14 FROM PITCH ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P14 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

CHECK FOR GROUND ON PLUG 031P14 PIN 7. IS GROUND PRESENT?

YES

REPLACE PITCH ILCA.

NO

LOCATE OPEN IN WIRE W664-GD255C20N BETWEEN PLUG 031P14 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-86-20, W664-134-20, W664-91-20, OR W664-135-20 FOR PINS 1 AND 2 OR WIRE W664-88-20, W664-136-20, W664-87-20, OR W664-133-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT PLUG 031P14 FROM PITCH ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P14 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PLUG 031P14 PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-18	B-19	3 AND 4
A-45	B-50	8 AND 10
A-06	B-07	11 AND 12
A-11	B-12	13 AND 14
A-13	B-12	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE PITCH ILCA.

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 AND PLUG 031P14 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P10 TO PLUG 031P14 PIN		WIRE NO
A-18	B-19	X	3	W664-92-20
		W	4	W664-93-20
A-45	B-50	PP	10	W664-95-20
		JJ	8	W664-94-20
A-11	B-12	m	14	W664-96-20
		L	13	W664-97-20 OR W664-115-20
A-13	B-12	N	13	W664-98-20 OR W664-115-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

END OF TASK

11-3.29 NO. 2 ROLL ILCA HAS ENGAGE TRANSIENT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

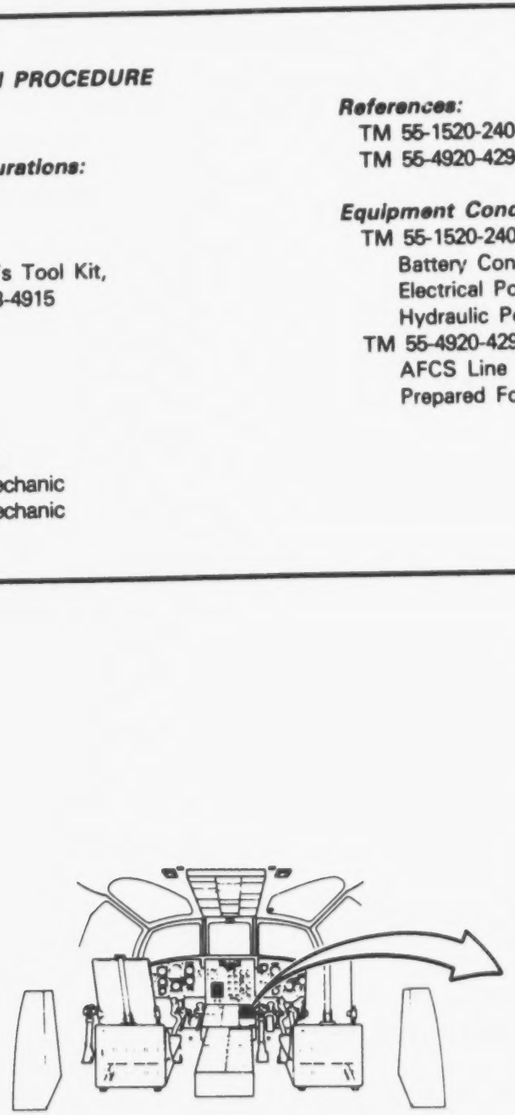
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

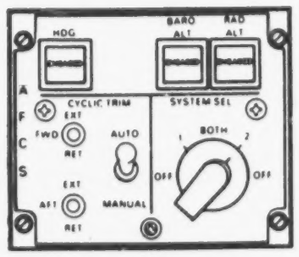
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

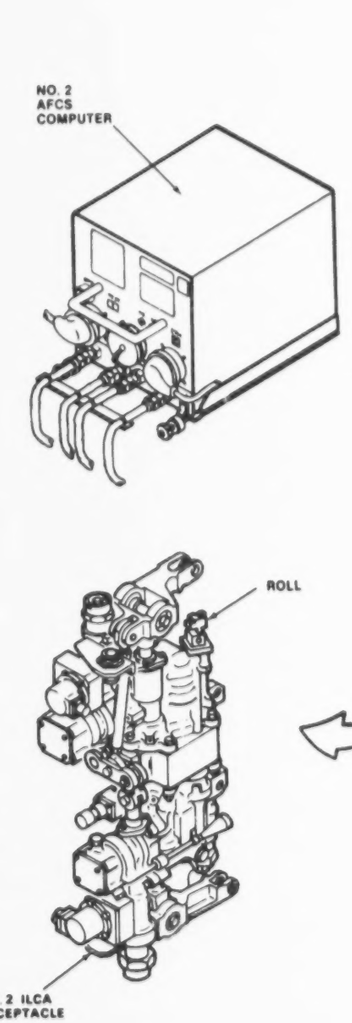
References:
TM 55-1520-240-23
TM 55-4920-429-13

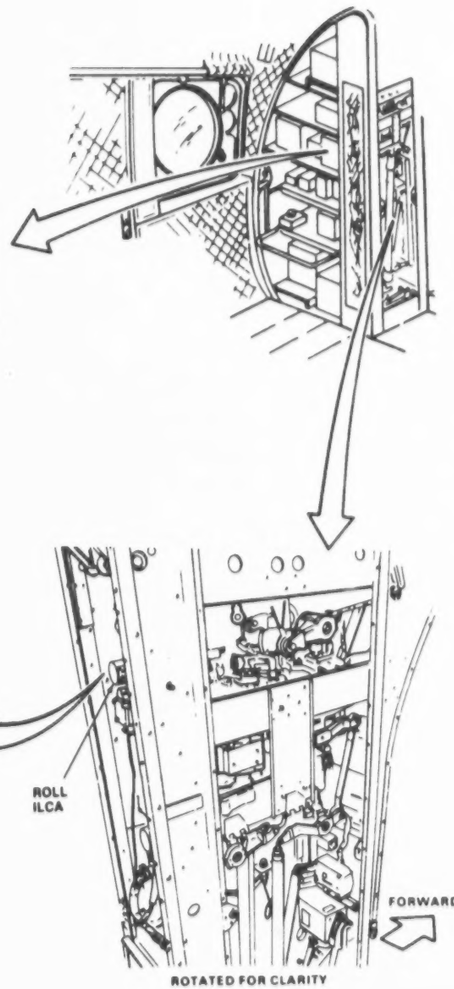
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use





AFCS PANEL





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11-3.29 NO. 2 ROLL ILCA HAS ENGAGE TRANSIENT (Continued)

PERFORM ROLL ILCA NULL TEST. REFER TO TM 55-1520-240-23. DOES ROLL ILCA NULL CHECK OKAY?

NO

YES

WAS ROLL ILCA AUTHORITY PHASING TEST PERFORMED BEFORE THE NULL TEST?

YES

NO

REPLACE NO. 2 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-34	B-35	LESS THAN 1100
A-49	B-48	1500 TO 2200
A-29	B-30	LESS THAN 1100
A-31	B-30	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

NO

DISCONNECT PLUG 031P16 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P16 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PLUG 031P16 PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-34	B-35	3 AND 4
A-49	B-48	8 AND 10
A-06	B-07	11 AND 12
A-29	B-30	13 AND 14
A-31	B-30	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE ROLL ILCA

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 PINS AND PLUG 031P16 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P10 TO PLUG 031P16 PIN	PIN	WIRE NO
A-34	B-35	t	3	W664-106-20
		e	4	W664-107-20
A-49	B-48	MM	10	W664-109-20
		NN	8	W664-108-20
A-29	B-30	k	14	W664-110-20
		j	13	W664-111-20 OR W664-117-20
A-31	B-30	m	13	W664-106-20 OR W664-117-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P16 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. **JUMPER PLUG 031P16 PINS 1** AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

NO

LOCATE OPEN IN WIRE W664-86-20, W664-127-20, W664-91-20 OR W664-126-20 FOR PINS 1 AND 2 OR WIRE W664-88-20, W664-125-20, W664-87-20 OR W664-128-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

CHECK FOR GROUND ON PLUG 031P16 PIN 7. IS GROUND PRESENT?

YES

REPLACE ROLL ILCA

NO

LOCATE OPEN IN WIRE W664-GD255A20N BETWEEN PLUG 031P16 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.30 NO. 2 YAW ILCA HAS ENGAGE TRANSIENT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

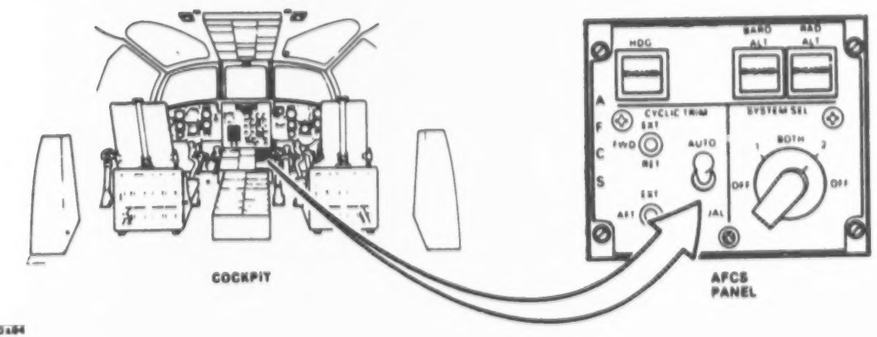
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

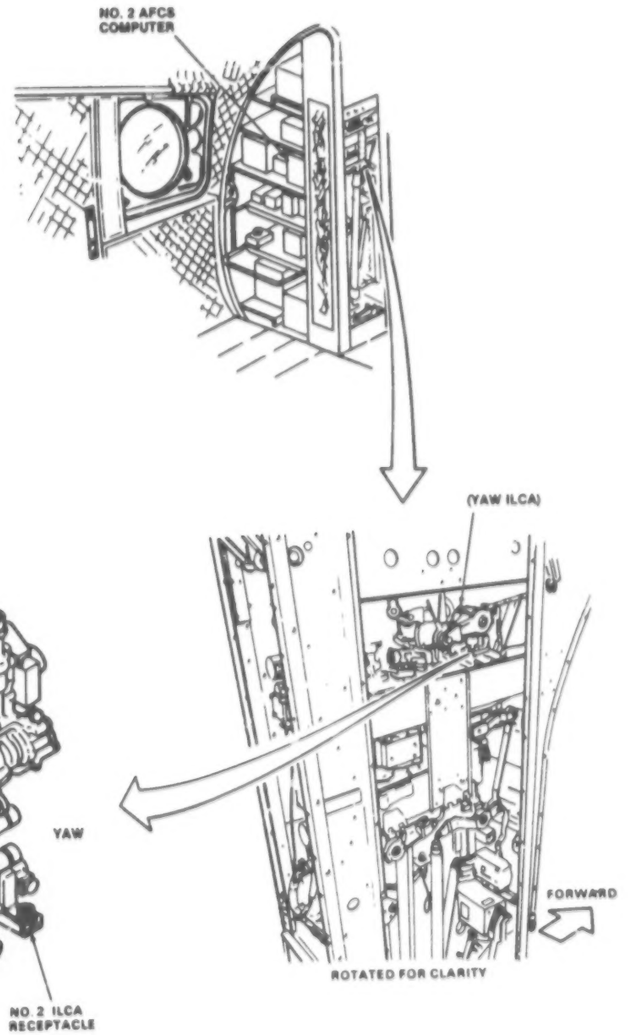
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use





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11-3.30 NO. 2 YAW ILCA HAS ENGAGE TRANSIENT (Continued)

PERFORM YAW ILCA NULL TEST. REFER TO TM 55-1520-240-23. DOES YAW ILCA NULL CHECK OKAY?

NO

YES

WAS YAW ILCA AUTHORITY PHASING TEST PERFORMED BEFORE THE NULL TEST?

YES

NO

REPLACE NO. 2 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	LESS THAN 1100
A-44	B-36	1500 TO 2200
A-47	B-46	LESS THAN 1100
A-41	B-46	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

NO

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P18 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P18 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

NO

LOCATE OPEN IN WIRE W664-86-20, W664-131-20, W664-91-20 OR W664-130-20 FOR PINS 1 AND 2 OR WIRE W664-88-20, W664-129-20, W664-87-20 OR W664-132-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

CHECK FOR GROUND ON PLUG 031P18 PIN 7. IS GROUND PRESENT?

YES

NO

REPLACE YAW ILCA.

LOCATE OPEN IN WIRE W664-GD225B20N BETWEEN 031P18 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

DISCONNECT PLUG 031P18 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P18 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PLUG 031P18 PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	3 AND 4
A-44	B-36	8 AND 10
A-06	B-07	11 AND 12
A-47	B-46	13 AND 14
A-41	B-46	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE YAW ILCA

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 PINS AND PLUG 031P18 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P10 TO PLUG 031P18		
	PIN	PIN		WIRE NO
A-42	B-43	GG	3	W664-105-20
		FF	4	W664-101-20
A-44	B-36	V	10	W664-103-20
		HH	8	W664-102-20
A-47	B-46	KK	14	W664-104-20
		BB	13	W664-100-20 OR W664-116-20
A-41	B-46	LL	13	W664-99-20 OR W664-116-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

END OF TASK

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11-3.31 NO. 2 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
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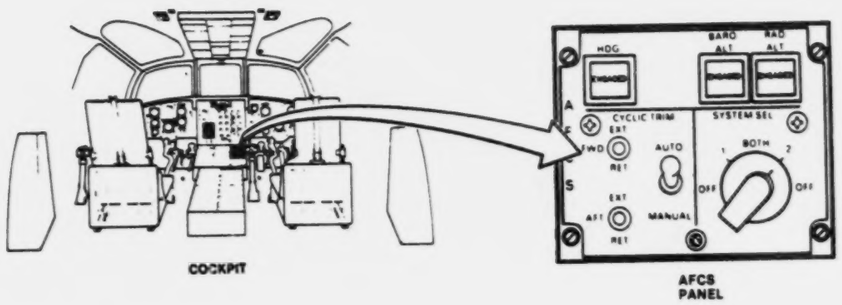
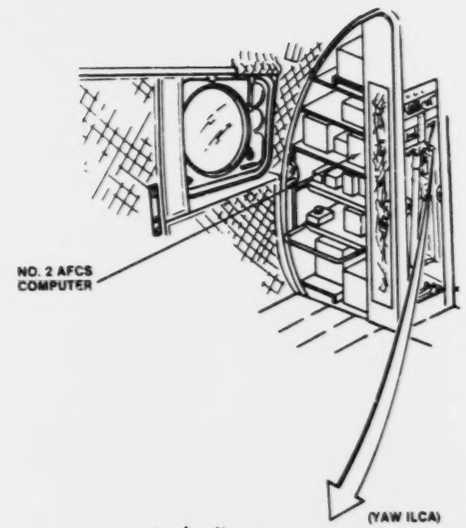
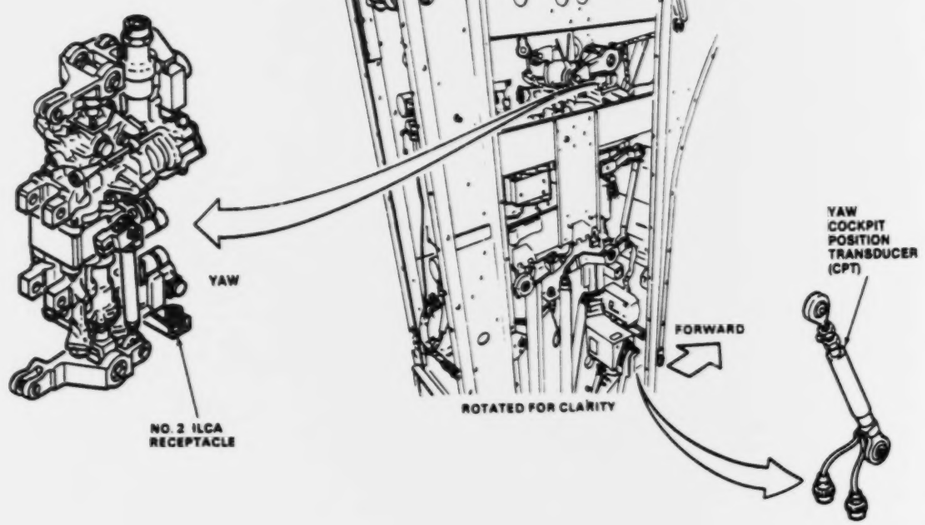
AFCS Line Test Set 145G0009-1
Prepared For Use







D145-11958-5PA

GO TO NEXT PAGE

11-3.31 NO. 2 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED (Continued)

PERFORM YAW ILCA AUTHORITY/PHASING TEST. REFER TO TM 55-1520-240-23. DOES YAW ILCA AUTHORITY/ PHASING CHECK OKAY?

YES

NO

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	LESS THAN 1100
A-44	B-36	1500 TO 2200
A-47	B-46	LESS THAN 1100
A-41	B-46	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

NO

DISCONNECT PLUG 031P18 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P18 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PLUG 031P18 PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	3 AND 4
A-44	B-36	8 AND 10
A-06	B-07	11 AND 12
A-47	B-46	13 AND 14
A-41	B-46	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE YAW ILCA.

NO

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P18 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P18 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

NO

LOCATE OPEN IN WIRE W664-86-20, W664-131-20, W664-91-20 OR W664-130-20 FOR PINS 1 AND 2 OR WIRE W664-88-20, W664-129-20, W664-87-20 OR W664-132-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

CHECK FOR GROUND ON PLUG 031P18 PIN 7. IS GROUND PRESENT?

YES

REPLACE YAW ILCA.

NO

LOCATE OPEN IN WIRE W664-GD225B20N BETWEEN PLUG 031P18 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 AND PLUG 031P18 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P10 TO PLUG 031P18		
		PIN	PIN	WIRE NO.
A-42	B-43	GG	3	W664-105-20
		FF	4	W664-101-20
A-44	B-36	V	10	W664-103-20
		HH	8	W664-102-20
A-47	B-46	KK	14	W664-104-20
		BB	13	W664-100-20 OR W664-116-20
A-41	B-46	LL	13	W664-99-20 OR W664-116-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

GO TO NEXT PAGE

11-3.31 NO. 2 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED (Continued)

YES

PERFORM DIRECTIONAL (YAW) CPT NULL AND OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES YAW CPT NULL AND OUTPUT TEST CHECK OKAY?

YES

REPLACE NO. 2 AFCS COMPUTER.

NO

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-39	B-38	LESS THAN 200
A-39	B-40	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER DISCONNECT YAW CPT PLUG WITH RED BAND FROM RECEPTACLE 031J12. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER JUMPER YAW CPT RECEPTACLE PINS A AND B. DOES TEST SET METER INDICATE CONTINUITY?

YES

CHECK FOR GROUND ON YAW CPT RECEPTACLE PIN F. IS GROUND PRESENT?

YES

REPLACE YAW CPT

NO

LOCATE OPEN IN WIRE W664-GD333A20N BETWEEN YAW CPT RECEPTACLE AND FUSELAGE GROUND REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-88-20, W664-123-20, W664-87-20 OR W664-124-20 FOR PINS A AND B. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT YAW CPT PLUG WITH RED BAND FROM RECEPTACLE 031J12. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN YAW CPT RECEPTACLE PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		YAW CPT RECEPTACLE PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-39	B-38	E AND C
A-39	B-40	E AND D

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE YAW CPT

NO

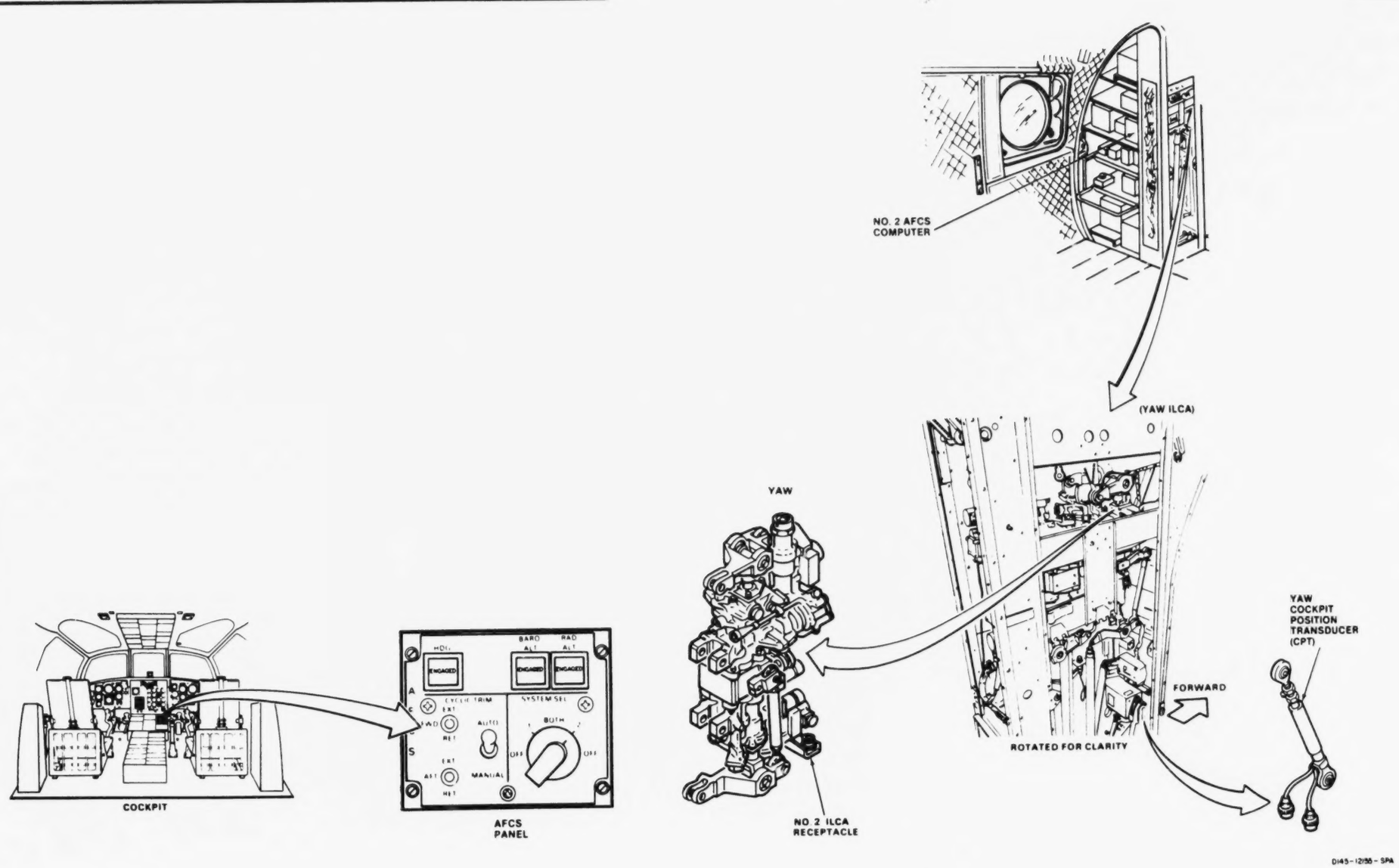
REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 AND YAW CPT RECEPTACLE PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P10 PIN	YAW CPT RECEPTACLE PIN	WIRE NO
A-39	B-38	z	E	W664-85-20
		y	D	W664-84-20
A-39	B-40	z	E	W664-85-20
		AA	C	W664-83-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

GO TO NEXT PAGE

11-3.31 NO. 2 YAW ILCA DOES NOT EXTEND OR RETRACT WHEN PEDALS ARE MOVED (Continued)



END OF TASK

11-3.32 NO. 2 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

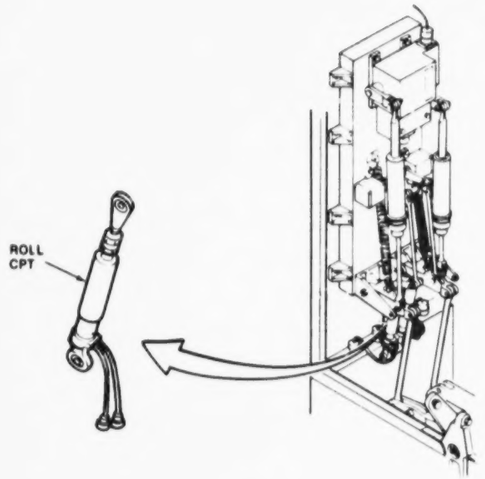
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

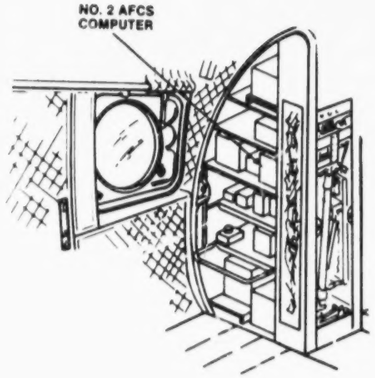
Materials:
None

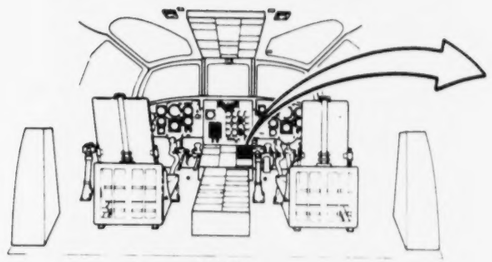
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

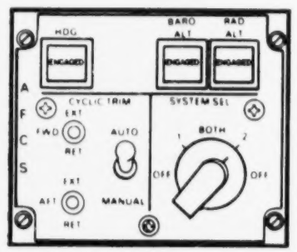
References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use

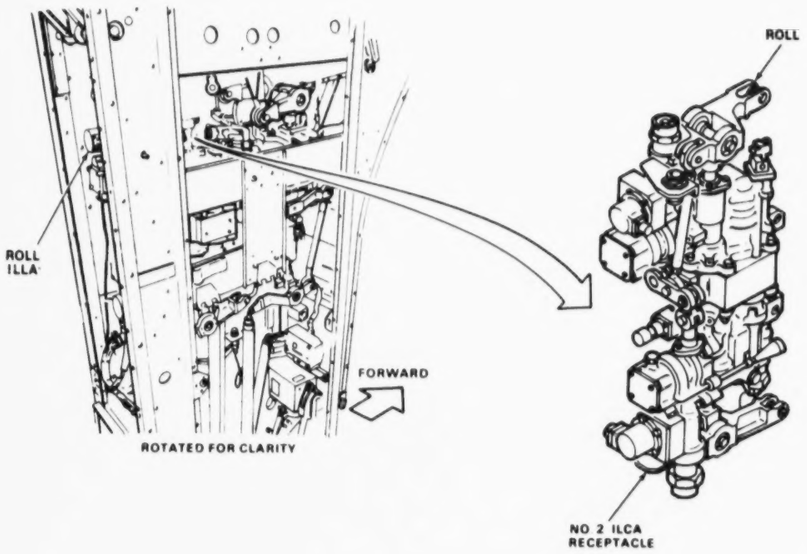





COCKPIT



AFCS PANEL



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11-3.32 NO. 2 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION (Continued)

PERFORM ROLL ILCA AUTHORITY/PHASING TEST. REFER TO TM 55-1520-240-23. DOES ROLL ILCA AUTHORITY PHASING CHECK OKAY?

YES →

NO ↓

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SEL** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SW POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	B-SELECT SWITCH	
A-34	B-35	LESS THAN 1100
A-49	B-48	1500 TO 2200
A-29	B-30	LESS THAN 1100
A-31	B-30	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES → REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P16 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P16 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES → CHECK FOR GROUND ON PLUG 031P16 PIN 7. IS GROUND PRESENT?

YES → REPLACE ROLL ILCA.

NO ↓ LOCATE OPEN IN WIRE W664-GD255A20N BETWEEN PLUG AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO ↓ LOCATE OPEN IN WIRE W664-86-20, W664-127-20, W664-91-20, OR W664-126-20 FOR PINS 1 AND 2 OR WIRE W664-88-20, W664-125-20, W664-87-20, OR W664-128-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → DISCONNECT PLUG 031P16 FROM ROLL ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P16 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SW POSITION		PLUG 031P16 PINS JUMPERED
A-SELECT SWITCH	B-SELECT SWITCH	
A-34	**B-35**	3 AND 4
A-49	**B-48**	8 AND 10
A-06	**B-07**	11 AND 12
A-29	**B-30**	13 AND 14
A-31	**B-30**	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES ↓ **REPLACE ROLL ILCA.**

NO → REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 PINS AND PLUG 031P16 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SW POSITION		PLUG 031P10 TO PLUG 031P16 PIN	PIN	WIRE NO
A-34	B-35	**t**	3	W664-106-20
		s	4	W664-107-20
A-49	B-48	mm	10	W664-109-20
		NN	8	W664-108-20
A-29	B-30	**k**	14	W664-110-20
		j	13	W664-111-20 OR W664-117-20
A-31	B-30	**m**	13	W664-112-20 OR W664-117-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

GO TO NEXT PAGE

11-3.32 NO. 2 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION (Continued)

PERFORM LATERAL (ROLL) CPT NULL AND OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES CPT NULL AND OUTPUT TEST CHECK OK?

YES

REPLACE NO. 2 AFCS COMPUTER.

NO

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SW POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	B-SELECT SWITCH	
A-27	B-26	LESS THAN 200
A-27	B-28	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT ROLL CPT PLUG WITH RED BAND FROM RECEPTACLE 031J9. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER ROLL CPT RECEPTACLE PINS A AND B. DOES TEST SET METER INDICATE CONTINUITY?

NO

LOCATE OPEN IN WIRE W664-88-20, W664-121-20, W664-81-20, OR W664-122-20 FOR PINS A AND B. REPAIR OR REPLACE WIRE AS REQUIRED.

YES

CHECK FOR GROUND ON ROLL CPT RECEPTACLE PIN F. IS GROUND PRESENT?

NO

LOCATE OPEN IN WIRE W664-GD330B20N BETWEEN ROLL CPT RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

YES

REPLACE LATERAL (ROLL) CPT.

NO

DISCONNECT ROLL CPT PLUG WITH RED BAND FROM RECEPTACLE 031J9. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN ROLL CPT RECEPTACLE PINS FOR THAT POSITION AS FOLLOWS:

SELECT SW POSITION		ROLL **CPT** RECEPTACLE PINS JUMPERED
A-SELECT SWITCH	B-SELECT SWITCH	
A-27	B-26	E AND C
A-27	B-28	E AND D

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE ROLL CPT

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 AND ROLL CPT RECEPTACLE PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SW POSITION		PLUG 031P10 PIN	ROLL CPT RECEPTACLE PIN	WIRE NO.
A-27	B-26	h	E	W664-82-20
		i	C	W664-80-20
A-27	B-28	h	E	W664-82-20
		g	D	W664-81-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

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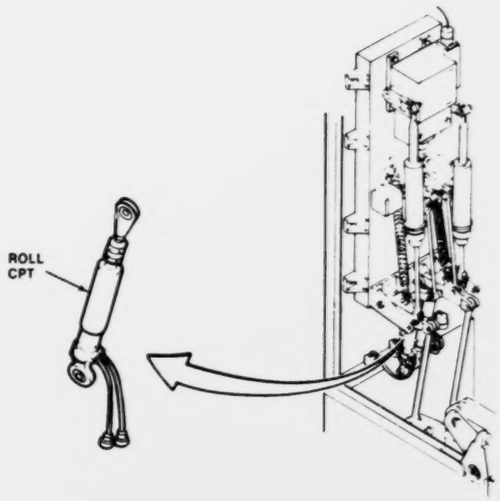
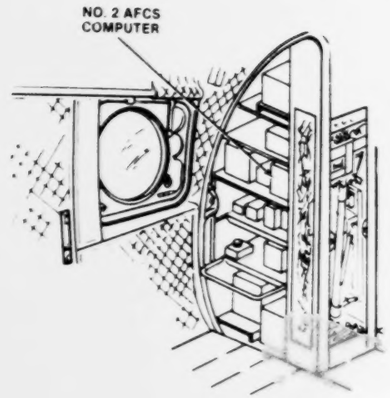
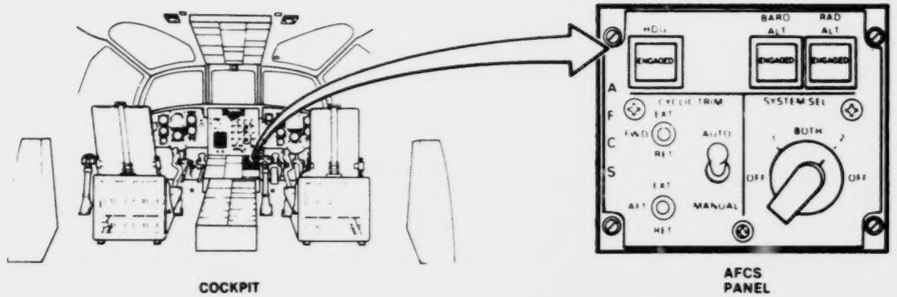
11-3.32 NO. 2 ROLL ILCA DOES NOT EXTEND OR RETRACT WITH LATERAL STICK MOTION (Continued)







COCKPIT

AFCS PANEL

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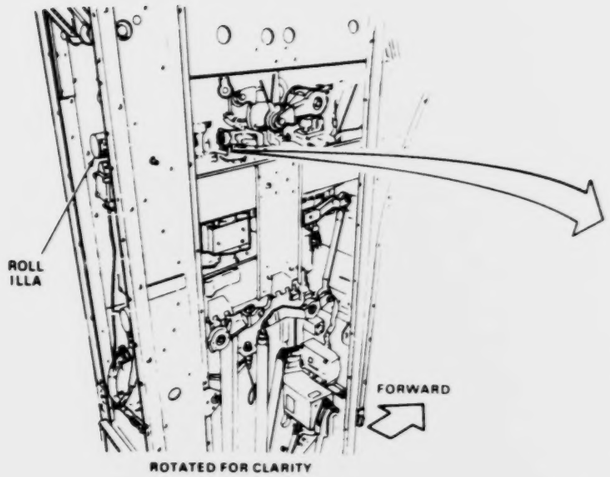

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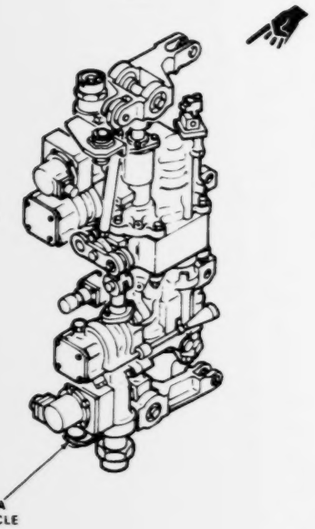

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END OF TASK

11-3.33 NO. 2 ROLL ILCA DOES NOT MOVE WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH MOVED RIGHT OR LEFT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

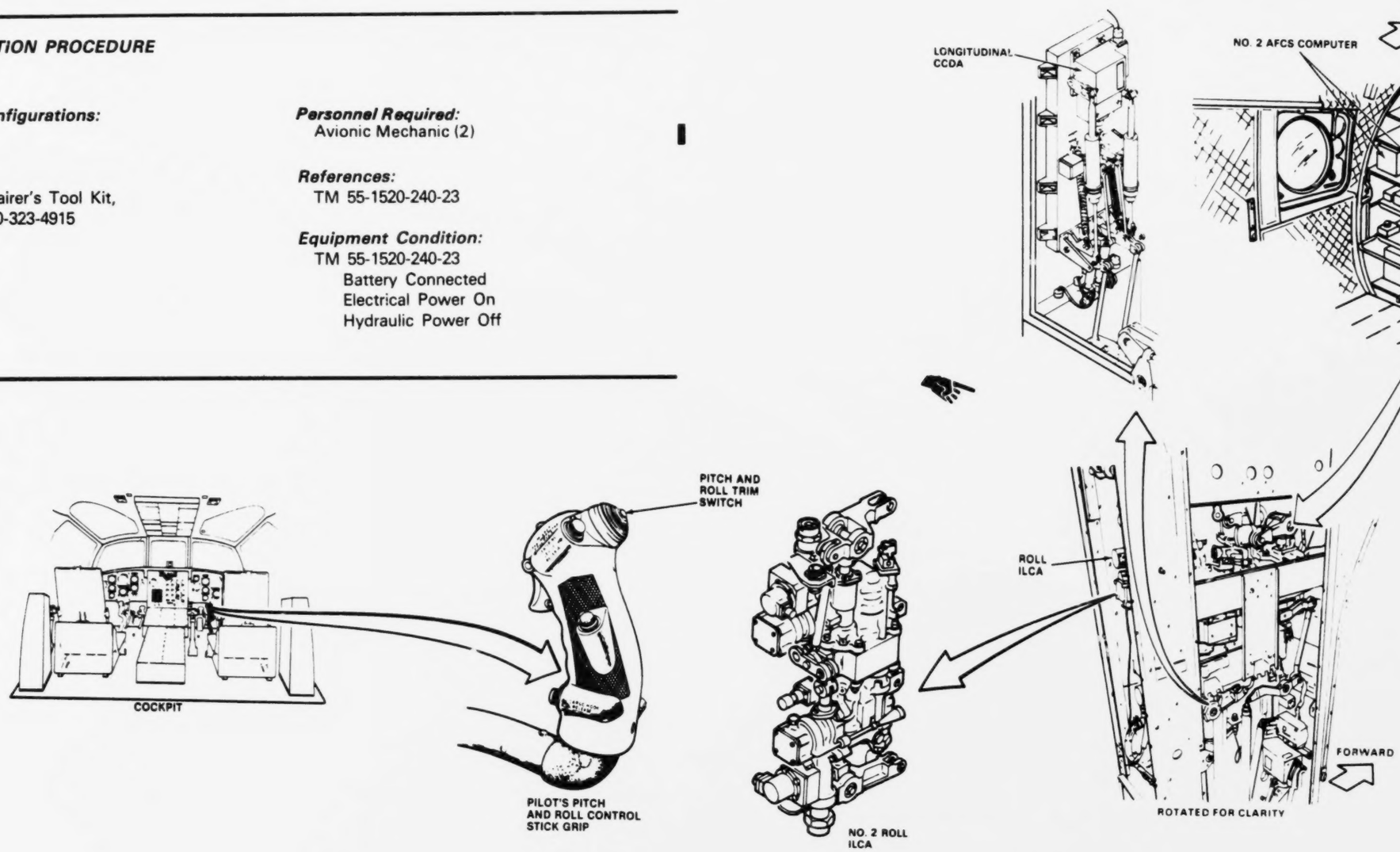
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off



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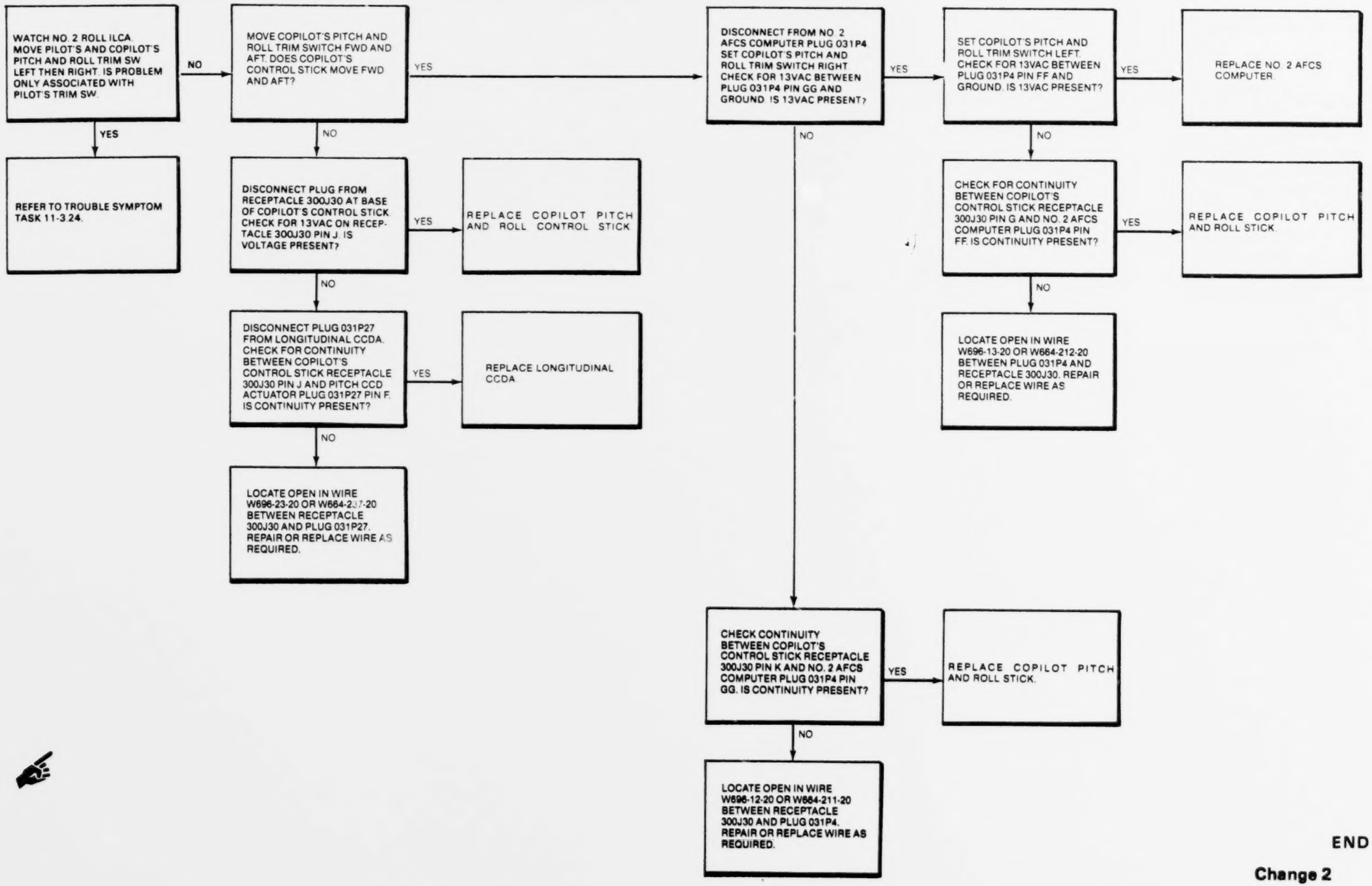
11-3.33 NO. 2 ROLL ILCA DOES NOT MOVE WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH MOVED RIGHT OR LEFT (Continued)


WATCH NO. 2 ROLL ILCA. MOVE PILOT'S AND COPILOT'S PITCH AND ROLL TRIM SW LEFT THEN RIGHT. IS PROBLEM ONLY ASSOCIATED WITH PILOT'S TRIM SW.
NO
MOVE COPILOT'S PITCH AND ROLL TRIM SWITCH FWD AND AFT. DOES COPILOT'S CONTROL STICK MOVE FWD AND AFT?
YES
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.24.
NO
DISCONNECT PLUG FROM RECEPTACLE 300J30 AT BASE OF COPILOT'S CONTROL STICK. CHECK FOR 13VAC ON RECEPTACLE 300J30 PIN J. IS VOLTAGE PRESENT?
YES
REPLACE COPILOT PITCH AND ROLL CONTROL STICK
NO
DISCONNECT PLUG 031P27 FROM LONGITUDINAL CCDA. CHECK FOR CONTINUITY BETWEEN COPILOT'S CONTROL STICK RECEPTACLE 300J30 PIN J AND PITCH CCD ACTUATOR PLUG 031P27 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE LONGITUDINAL CCDA
NO
LOCATE OPEN IN WIRE W696-23-20 OR W664-237-20 BETWEEN RECEPTACLE 300J30 AND PLUG 031P27. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT FROM NO. 2 AFCS COMPUTER PLUG 031P4. SET COPILOT'S PITCH AND ROLL TRIM SWITCH RIGHT. CHECK FOR 13VAC BETWEEN PLUG 031P4 PIN GG AND GROUND. IS 13VAC PRESENT?
YES
SET COPILOT'S PITCH AND ROLL TRIM SWITCH LEFT. CHECK FOR 13VAC BETWEEN PLUG 031P4 PIN FF AND GROUND. IS 13VAC PRESENT?
YES
REPLACE NO. 2 AFCS COMPUTER
NO
CHECK FOR CONTINUITY BETWEEN COPILOT'S CONTROL STICK RECEPTACLE 300J30 PIN G AND NO. 2 AFCS COMPUTER PLUG 031P4 PIN FF. IS CONTINUITY PRESENT?
YES
REPLACE COPILOT PITCH AND ROLL STICK.
NO
LOCATE OPEN IN WIRE W696-13-20 OR W664-212-20 BETWEEN PLUG 031P4 AND RECEPTACLE 300J30. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK CONTINUITY BETWEEN COPILOT'S CONTROL STICK RECEPTACLE 300J30 PIN K AND NO. 2 AFCS COMPUTER PLUG 031P4 PIN GG. IS CONTINUITY PRESENT?
YES
REPLACE COPILOT PITCH AND ROLL STICK.
NO
LOCATE OPEN IN WIRE W696-12-20 OR W664-211-20 BETWEEN RECEPTACLE 300J30 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.34 NO. 2 AFCS COMPUTER BITE SWITCH DOES NOT LIGHT AND COUNTER DOES NOT STEP WHEN BITE SWITCH IS PRESSED AND RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

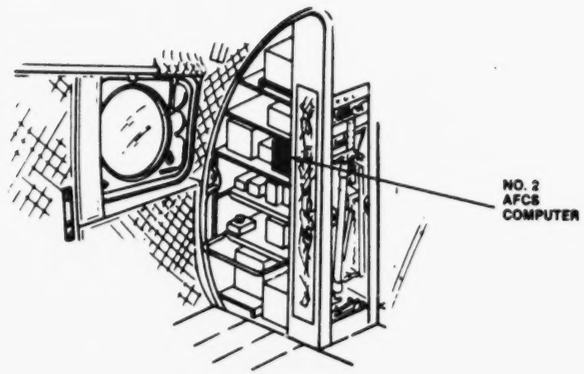
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

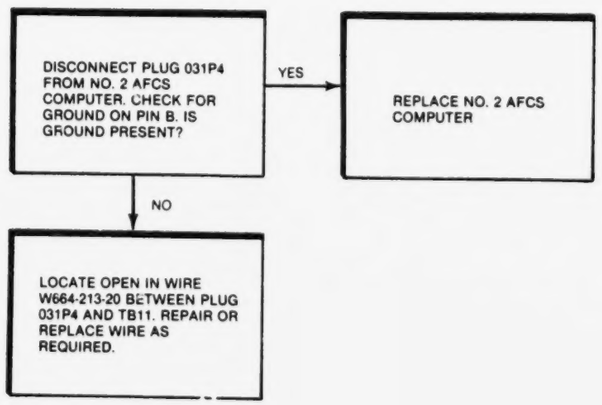
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM55-1520-240-23

Equipment Condition:
TM55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On




DISCONNECT PLUG 031P4 FROM NO. 2 AFCS COMPUTER. CHECK FOR GROUND ON PIN B. IS GROUND PRESENT?
YES
REPLACE NO. 2 AFCS COMPUTER
NO
LOCATE OPEN IN WIRE W664-213-20 BETWEEN PLUG 031P4 AND TB11. REPAIR OR REPLACE WIRE AS REQUIRED.

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END OF TASK

11-3.35 FORWARD LCT INDICATOR DOES NOT INDICATE EXTEND OR RETRACT DURING MANUAL CONTROL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

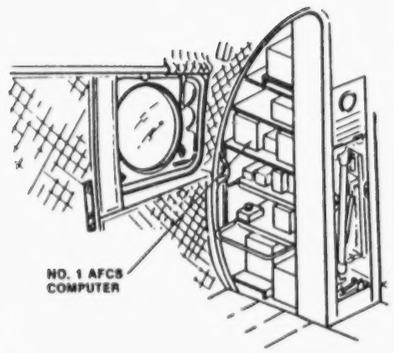
Tools:
Electrical Repairer's Tool Kit, NSN80-00-323-4915
Multimeter

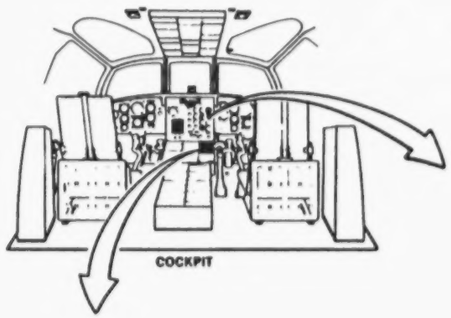
Materials:
None

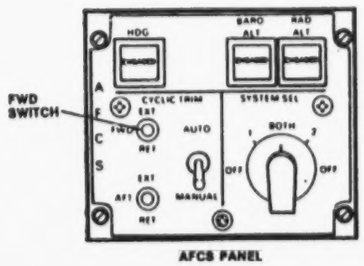
Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

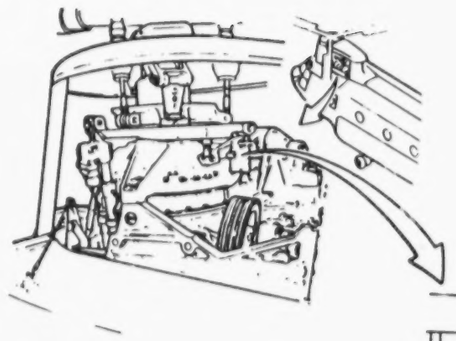
References:
TM 55-1520-240-23

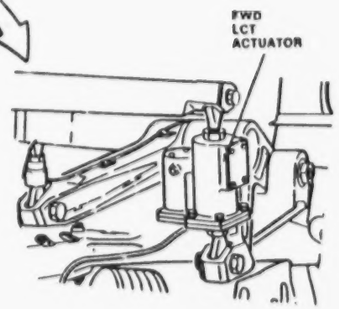
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off











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11-3.34.1 FORWARD LCT ACTUATOR OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Digital Ohmmeter

Materials:
None

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
Work Platform Open

	TASK	RESULT
1.	**Set cyclic trim switch (1) to MANUAL position.**	
	CAUTION **Do not operate the LCT actuators manually without hydraulic power on the helicopter.**	
2.	**Using FWD (EXT-RET) switch (2), fully retract the FWD LCT actuator (3).**	
3.	**Remove electrical power from the actuator and disconnect the connector.**	
4.	**Using a digital ohmmeter, check pins A and C of FWD actuator connection (TASK 11-3.1).**	Circuit should show open.
5.	**Reconnect the actuator and apply electrical power.**	
6.	**Using FWD (EXT-RET) switch (2), fully extend the FWD LCT actuator (3).**	
7.	**Remove electrical power from the actuator and disconnect the connector.**	
8.	**Using a digital ohmmeter, check pins B and C of FWD actuator connection (TASK 11-3.1).**	Circuit should show open.
9.	**Reconnect the actuator and apply electrical power.**	
10.	**Using FWD (EXT-RET) switch (2), operate the FWD actuator from full extend to full retract. Clock the travel time.**	Time must not exceed 25 seconds.
11.	**Using FWD (EXT-RET) switch (2), operate the FWD actuator from full retract to full extend. Clock the travel time.**	Time must not exceed 25 seconds.
12.	**Manuall operate the actuator to full retract.**	If acceptable FWD actuator operation is not obtained in all preceding steps, replace defective actuator (TM 55-1520-240-23).
13.	**Move cyclic trim switch (1) to AUTO.**	Cockpit LCT indicator (4) should show GND.
14.	**Perform an AFCS BITE TEST on the No. 1 and No. 2 systems (TASK 11-3.3).**	Failure of any AFCS BITE steps for LCT operation indicates possible actuator defects. Replace defective actuator (TM 55-1520-240-23).
15.	**Monitor the cockpit LCT indicator (4).**	Erratic indicator movement indicates possible actuator defect. Replace defective actuator (TM 55-1520-240-23).

FOLLOW-ON MAINTENANCE

TM 55-1520-240-23
Hydraulic Power Off
Electrical Power Off
Battery Disconnected
Work Platform Closed

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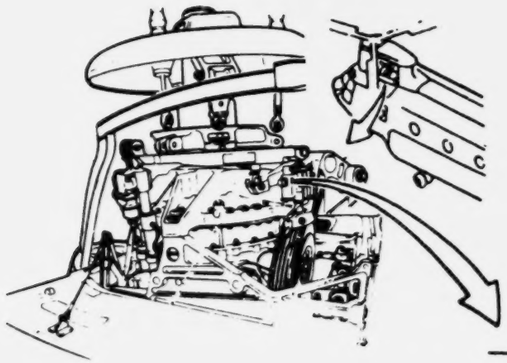
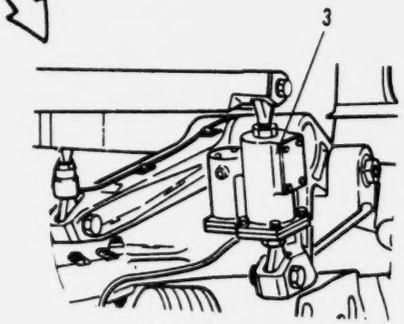
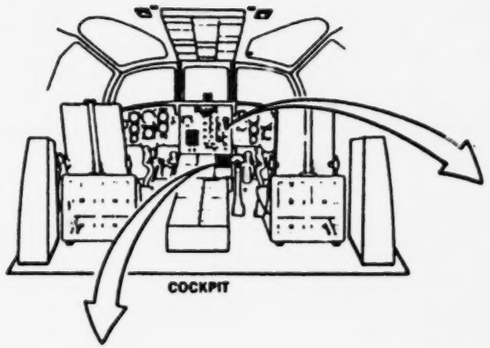
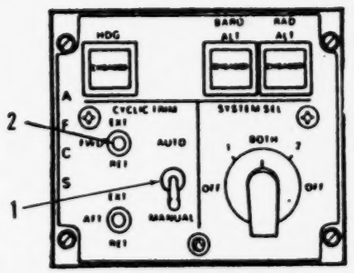






COCKPIT



AFCS PANEL

END OF TASK

11-3.34.2 AFT LCT ACTUATOR OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Digital Ohmmeter

Materials:
None

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
Work Platform Open

TASK	RESULT
1. **Set cyclic trim switch (1) to manual position.**	
CAUTION **Do not operate the LCT actuators manually without hydraulic power on the helicopter.**	
2. **Using AFT (EXT-RET) switch (2), fully retract the AFT LCT actuator.**	
3. **Remove electrical power from the actuator and disconnect the connector.**	
4. **Using a digital ohmmeter, check pins A and C of AFT actuator connection (TASK 11-3.1).**	Circuit should show open.
5. **Reconnect the actuator and apply electrical power.**	
6. **Using AFT (EXT-RET) switch (2), fully extend the AFT LCT actuator (3).**	
7. **Remove electrical power from the actuator and disconnect the connector.**	
8. **Using a digital ohmmeter, check pins B and C of AFT actuator connection (TASK 11-3.1).**	Circuit should show open.
9. **Reconnect the actuator and apply electrical power.**	
10. **Using AFT (RET-EXT) switch (2), operate the AFT actuator (3) from full extend to full retract. Clock the travel time.**	Time must not exceed 25 seconds.
11. **Using AFT (RET-EXT) switch (2), operate the AFT actuator (3) from full retract to full extend. Clock the travel time.**	Time must not exceed 25 seconds.
12. **Manually operate the actuator to full retract.**	If acceptable AFT actuator operation is not obtained in all preceding steps, replace defective actuator (TM 55-1520-240-23).
13. **Move cyclic trim switch (1) to AUTO.**	Cockpit LCT indicator (4) should show GND.
14. **Perform an AFCS BITE TEST on the No. 1 and No. 2 systems (TASK 11-3.3).**	Failure of any AFCS BITE steps for LCT operation indicates possible actuator defect. Replace defective actuator (TM 55-1520-240-23).
15. **Monitor the cockpit LCT indicator (4).**	Erratic indicator movement indicates possible actuator defect. Replace defective actuator (TM 55-1520-240-23).

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23
Hydraulic Power Off
Electrical Power Off
Battery Disconnected
Work Platform Closed

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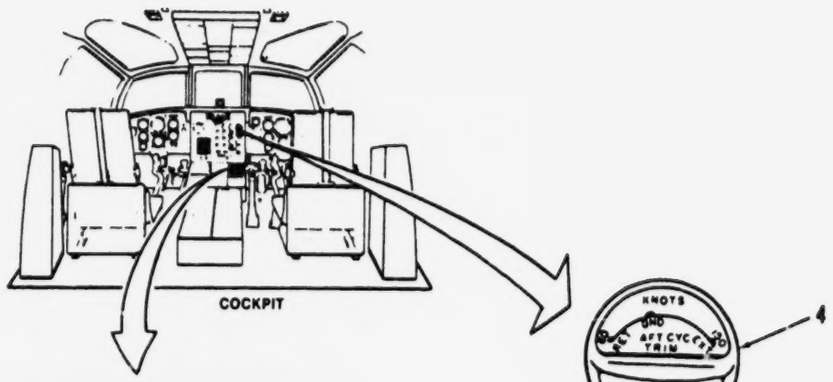

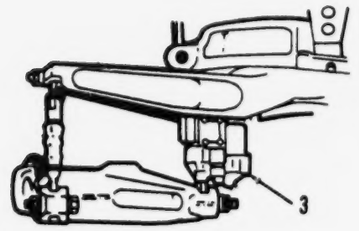

END OF TASK

11-3.34.3 LCT ACTUATOR CONTROL TRANSISTOR BVRNS OUT

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Work Platform Open

TASK	RESULT
1. **Perform forward and aft LCT actuator operational checks (Tasks 11-3.34.1 and 11-3.34.2).**	
2. **Inspect forward and aft LCT actuators.**	Replace LCT actuators as required (TM 55-1520-240-23).
3. **Inspect helicopters wires and connectors for damage and contamination (TASK 11-3.1).**	

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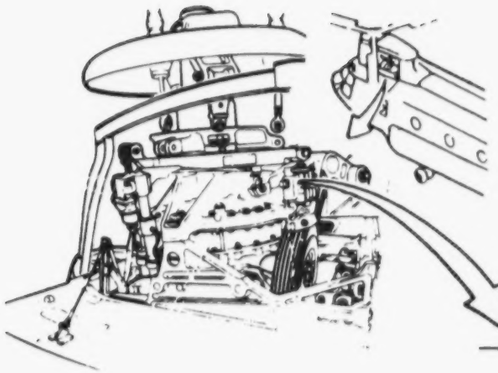
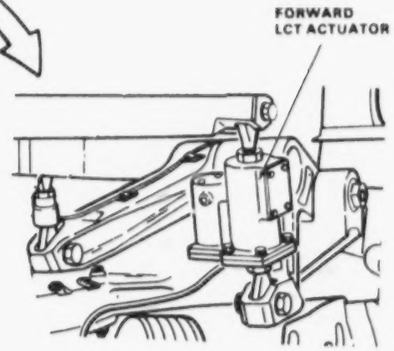
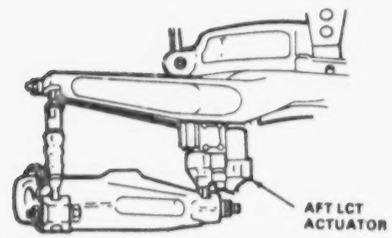
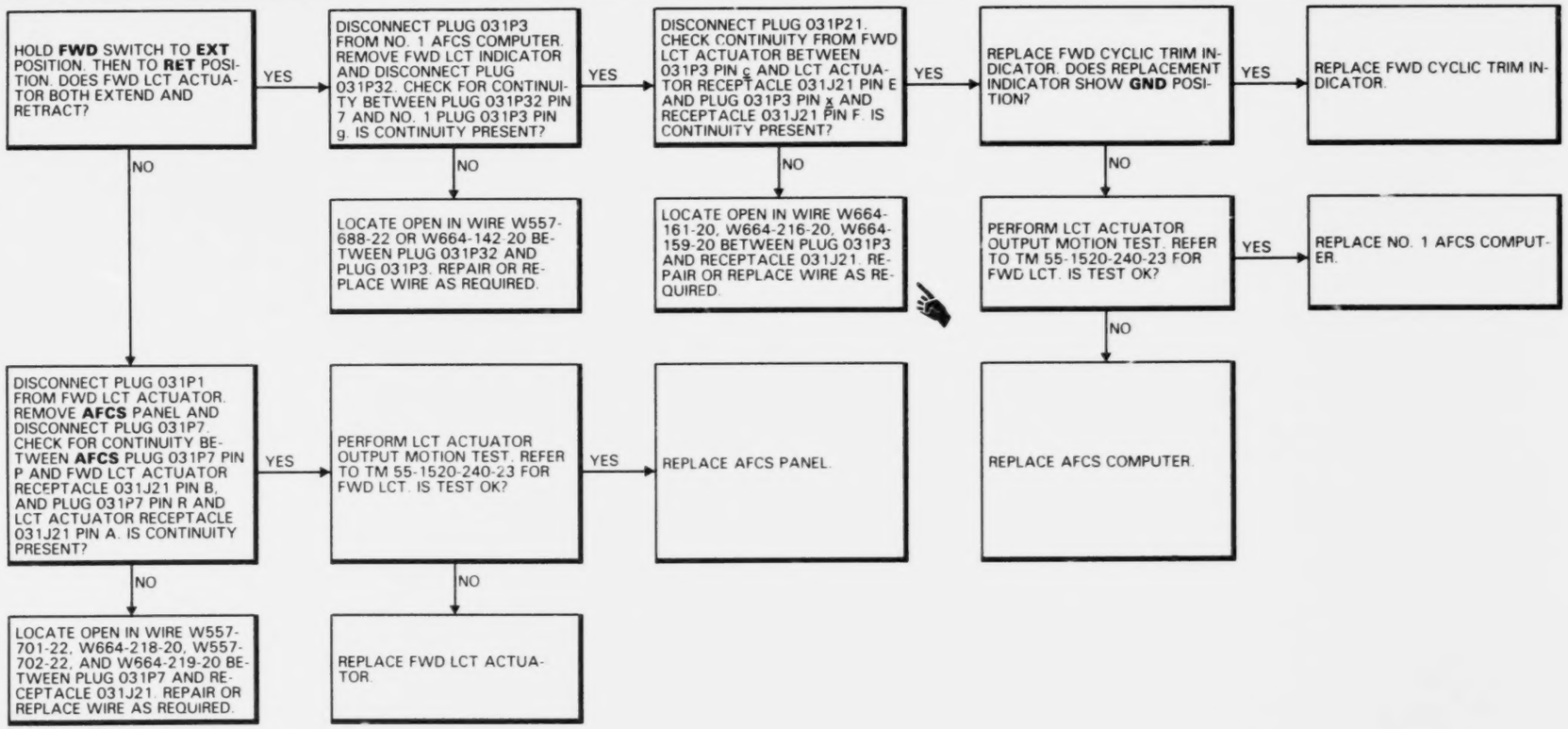






END OF TASK

11-3.35 FORWARD LCT INDICATOR DOES NOT INDICATE EXTEND OR RETRACT DURING MANUAL CONTROL (Continued)


HOLD **FWD** SWITCH TO **EXT** POSITION. THEN TO **RET** POSITION. DOES FWD LCT ACTUATOR BOTH EXTEND AND RETRACT?
YES
DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. REMOVE FWD LCT INDICATOR AND DISCONNECT PLUG 031P32. CHECK FOR CONTINUITY BETWEEN PLUG 031P32 PIN 7 AND NO. 1 PLUG 031P3 PIN g. IS CONTINUITY PRESENT?
YES
DISCONNECT PLUG 031P21. CHECK CONTINUITY FROM FWD LCT ACTUATOR BETWEEN 031P3 PIN c AND LCT ACTUATOR RECEPTACLE 031J21 PIN E AND PLUG 031P3 PIN x AND RECEPTACLE 031J21 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE FWD CYCLIC TRIM INDICATOR. DOES REPLACEMENT INDICATOR SHOW **GND** POSITION?
YES
REPLACE FWD CYCLIC TRIM INDICATOR.
NO
LOCATE OPEN IN WIRE W557-688-22 OR W664-142-20 BETWEEN PLUG 031P32 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-161-20, W664-216-20, W664-159-20 BETWEEN PLUG 031P3 AND RECEPTACLE 031J21. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
PERFORM LCT ACTUATOR OUTPUT MOTION TEST. REFER TO TM 55-1520-240-23 FOR FWD LCT. IS TEST OK?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REPLACE AFCS COMPUTER.
NO
DISCONNECT PLUG 031P1 FROM FWD LCT ACTUATOR. REMOVE **AFCS** PANEL AND DISCONNECT PLUG 031P7. CHECK FOR CONTINUITY BETWEEN **AFCS** PLUG 031P7 PIN P AND FWD LCT ACTUATOR RECEPTACLE 031J21 PIN B, AND PLUG 031P7 PIN R AND LCT ACTUATOR RECEPTACLE 031J21 PIN A. IS CONTINUITY PRESENT?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST. REFER TO TM 55-1520-240-23 FOR FWD LCT. IS TEST OK?
YES
REPLACE AFCS PANEL.
NO
LOCATE OPEN IN WIRE W557-701-22, W664-218-20, W557-702-22, AND W664-219-20 BETWEEN PLUG 031P7 AND RECEPTACLE 031J21. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE FWD LCT ACTUATOR.

END OF TASK

11-3.36 AFT LCT INDICATOR DOES NOT INDICATE EXTEND OR RETRACT DURING MANUAL CONTROL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

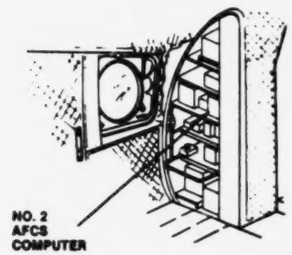
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

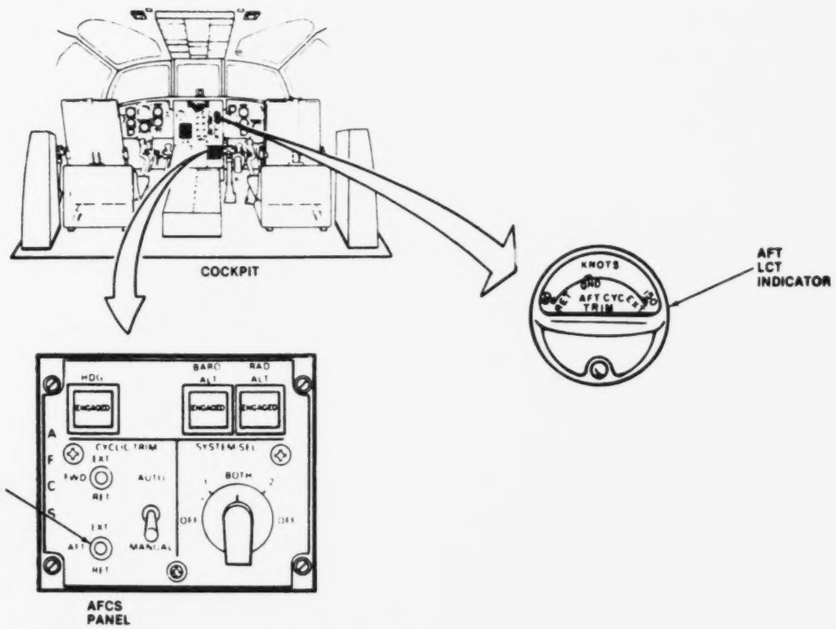
Materials:
None

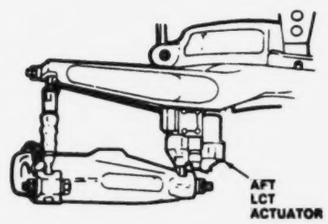
Personnel Required:
38K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off







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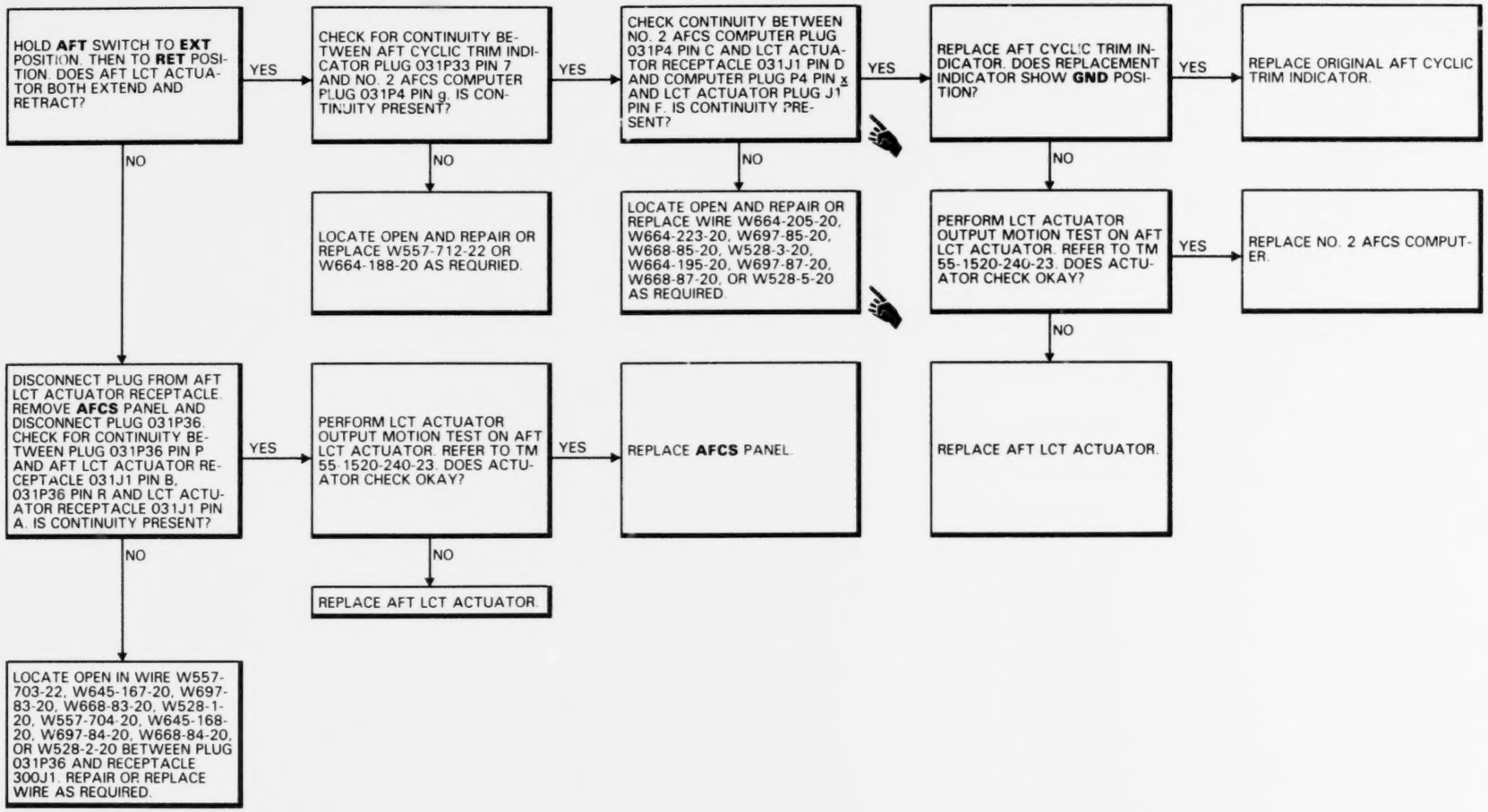
11-3.36 AFT LCT INDICATOR DOES NOT SHOW EXTENSION OR RETRACTION IN MANUAL CONTROL (Continued)


HOLD **AFT** SWITCH TO **EXT** POSITION. THEN TO **RET** POSITION. DOES AFT LCT ACTUATOR BOTH EXTEND AND RETRACT?
YES
CHECK FOR CONTINUITY BETWEEN AFT CYCLIC TRIM INDICATOR PLUG 031P33 PIN 7 AND NO. 2 AFCS COMPUTER PLUG 031P4 PIN g. IS CONTINUITY PRESENT?
YES
CHECK CONTINUITY BETWEEN NO. 2 AFCS COMPUTER PLUG 031P4 PIN C AND LCT ACTUATOR RECEPTACLE 031J1 PIN D AND COMPUTER PLUG P4 PIN x AND LCT ACTUATOR PLUG J1 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE AFT CYCLIC TRIM INDICATOR. DOES REPLACEMENT INDICATOR SHOW **GND** POSITION?
YES
REPLACE ORIGINAL AFT CYCLIC TRIM INDICATOR.
NO
LOCATE OPEN AND REPAIR OR REPLACE W557-712-22 OR W664-188-20 AS REQURIED.
NO
LOCATE OPEN AND REPAIR OR REPLACE WIRE W664-205-20, W664-223-20, W697-85-20, W668-85-20, W528-3-20, W664-195-20, W697-87-20, W668-87-20, OR W528-5-20 AS REQUIRED.
NO
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON AFT LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REPLACE AFT LCT ACTUATOR.
NO
DISCONNECT PLUG FROM AFT LCT ACTUATOR RECEPTACLE. REMOVE **AFCS** PANEL AND DISCONNECT PLUG 031P36. CHECK FOR CONTINUITY BETWEEN PLUG 031P36 PIN P AND AFT LCT ACTUATOR RECEPTACLE 031J1 PIN B, 031P36 PIN R AND LCT ACTUATOR RECEPTACLE 031J1 PIN A. IS CONTINUITY PRESENT?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON AFT LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
REPLACE **AFCS** PANEL.
NO
REPLACE AFT LCT ACTUATOR.
NO
LOCATE OPEN IN WIRE W557-703-22, W645-167-20, W697-83-20, W668-83-20, W528-1-20, W557-704-20, W645-168-20, W697-84-20, W668-84-20, OR W528-2-20 BETWEEN PLUG 031P36 AND RECEPTACLE 300J1. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.37 HDG SWITCH ENGAGED CAPTION DOES NOT LIGHT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

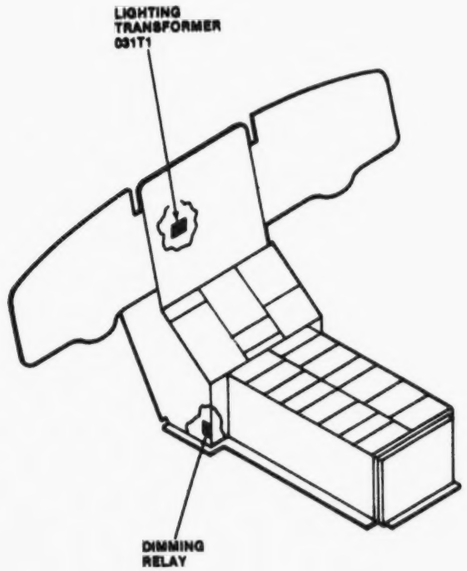
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

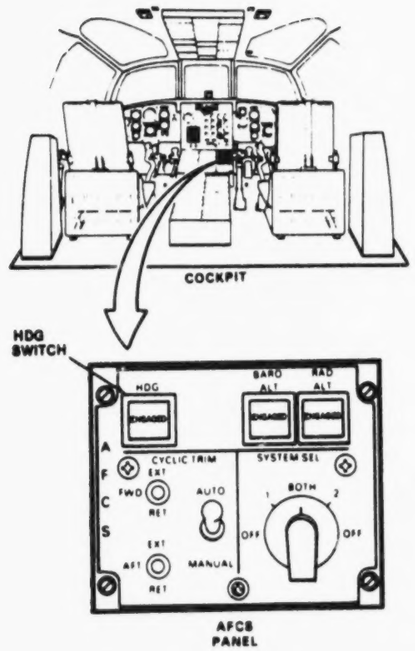
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





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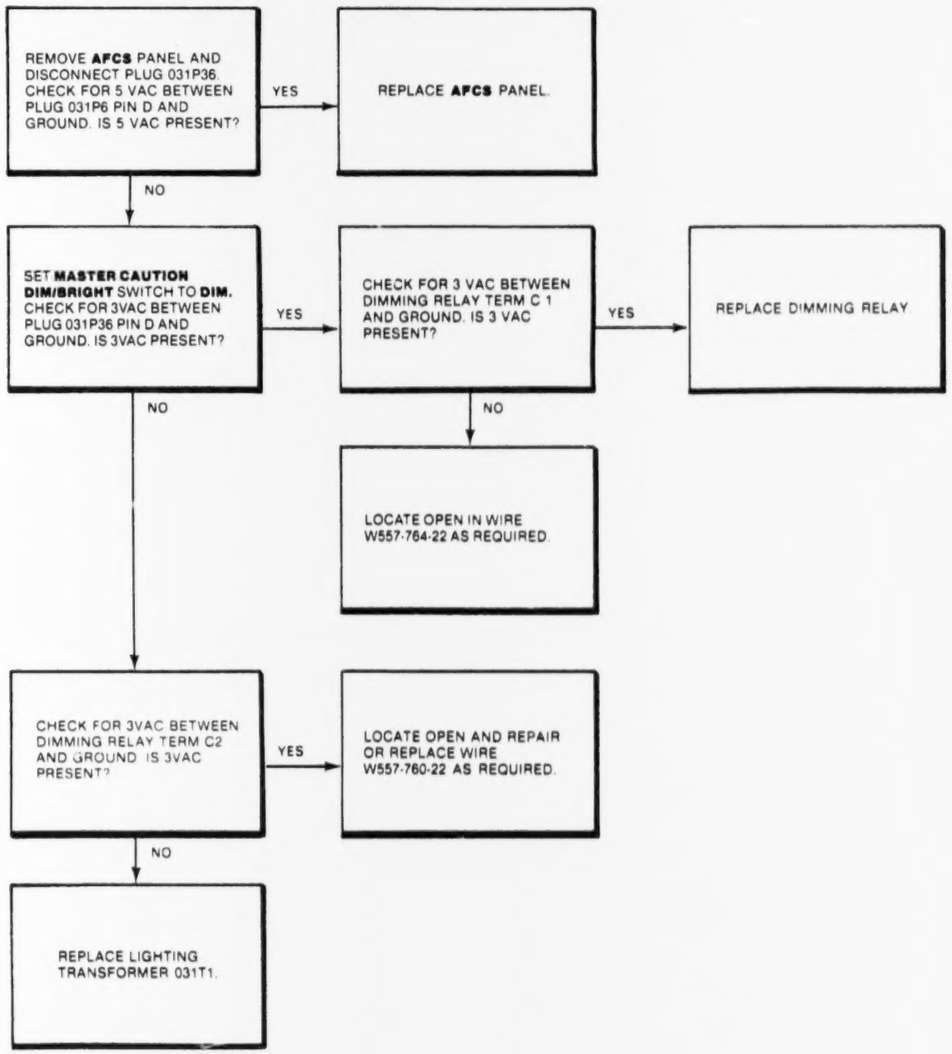
11-3.37 HDG SWITCH ENGAGED CAPTION DOES NOT LIGHT (Continued)


REMOVE **AFCS** PANEL AND DISCONNECT PLUG 031P36. CHECK FOR 5 VAC BETWEEN PLUG 031P6 PIN D AND GROUND. IS 5 VAC PRESENT?
YES
REPLACE **AFCS** PANEL.
NO
SET **MASTER CAUTION DIM/BRIGHT** SWITCH TO **DIM.** CHECK FOR 3VAC BETWEEN PLUG 031P36 PIN D AND GROUND. IS 3VAC PRESENT?
YES
CHECK FOR 3 VAC BETWEEN DIMMING RELAY TERM C 1 AND GROUND. IS 3 VAC PRESENT?
YES
REPLACE DIMMING RELAY
NO
LOCATE OPEN IN WIRE W557-764-22 AS REQUIRED.
NO
CHECK FOR 3VAC BETWEEN DIMMING RELAY TERM C2 AND GROUND. IS 3VAC PRESENT?
YES
LOCATE OPEN AND REPAIR OR REPLACE WIRE W557-760-22 AS REQUIRED.
NO
REPLACE LIGHTING TRANSFORMER 031T1.

END OF TASK

11-3.38 RADAR OR BARO ALT ENGAGED CAPTIONS DO NOT COME ON WHEN PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

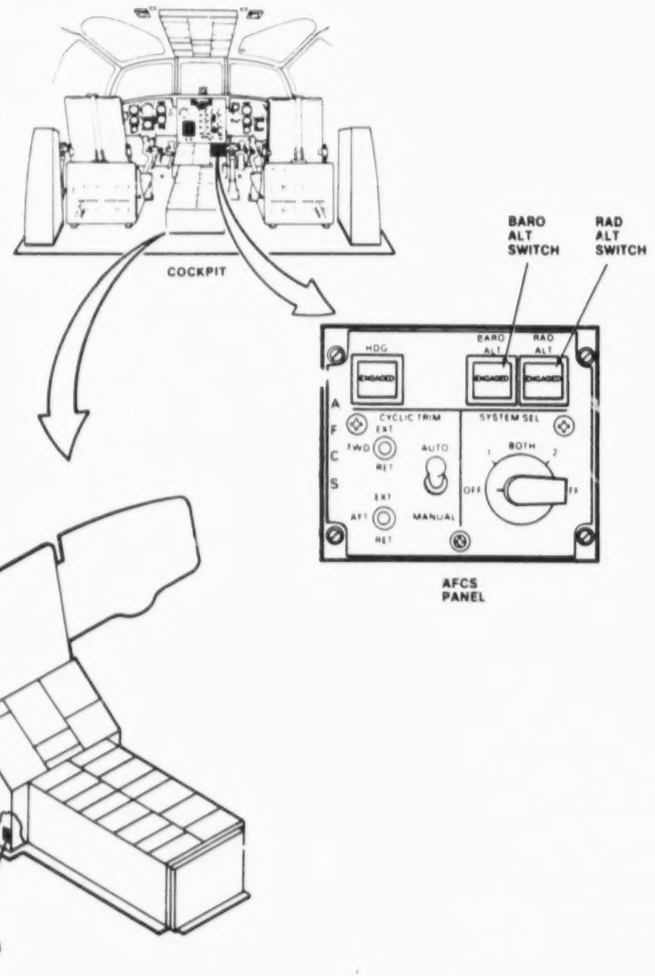
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

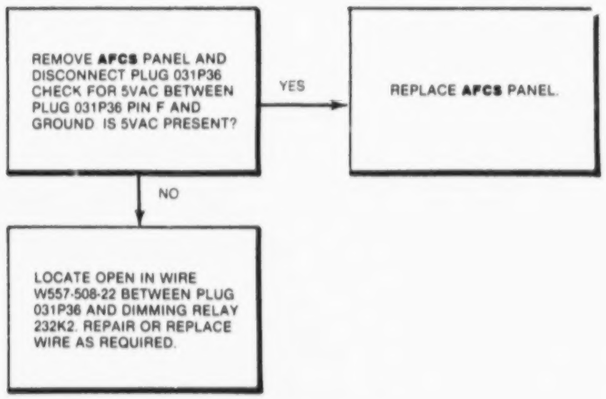
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM55-1520-240-23

Equipment Condition:
TM55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off




REMOVE AFCS PANEL AND DISCONNECT PLUG 031P36 CHECK FOR 5VAC BETWEEN PLUG 031P36 PIN F AND GROUND. IS 5VAC PRESENT?
YES
REPLACE AFCS PANEL.
NO
LOCATE OPEN IN WIRE W557-508-22 BETWEEN PLUG 031P36 AND DIMMING RELAY 232K2. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.39 PITCH AND ROLL CONTROL STICK DOES NOT MOVE FORWARD OR AFT WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH IS MOVED FORWARD AND AFT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

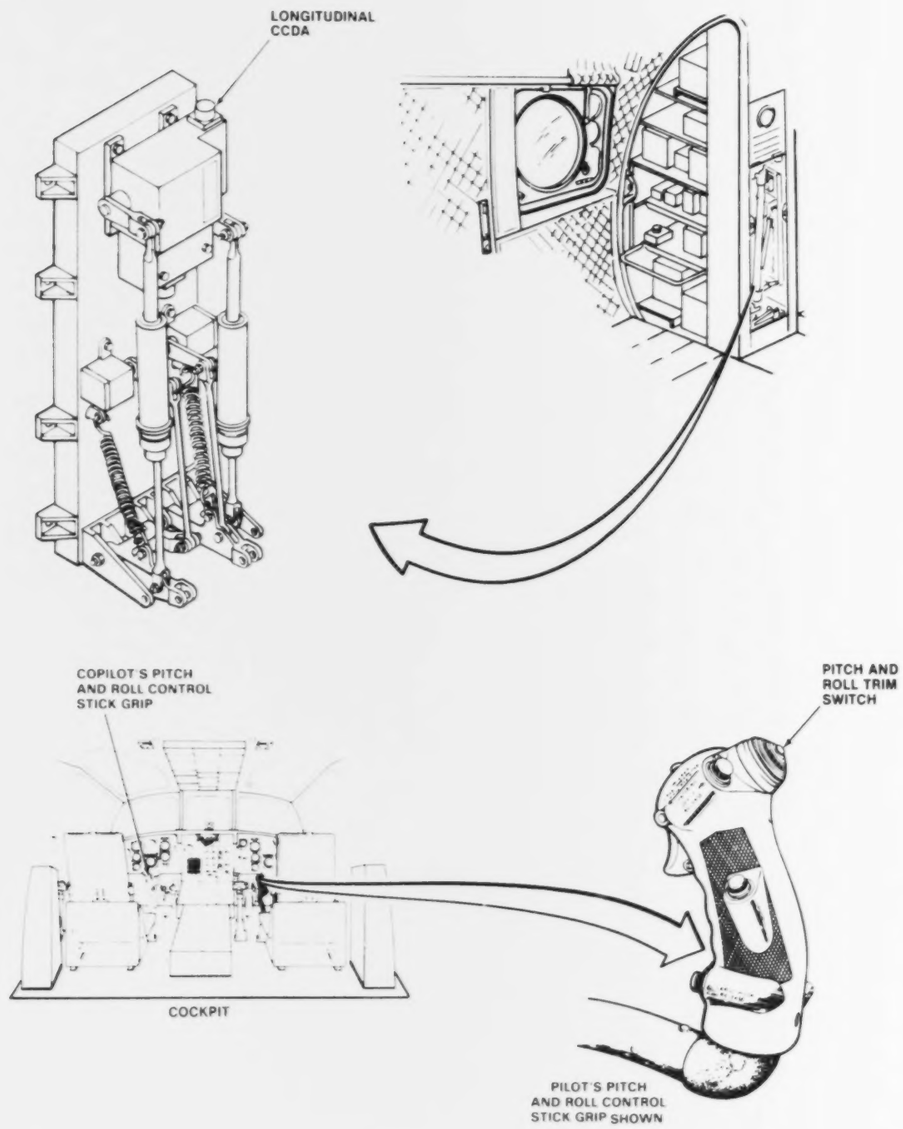
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


LONGITUDINAL CCDA
COPILOT'S PITCH AND ROLL CONTROL STICK GRIP
PITCH AND ROLL TRIM SWITCH
COCKPIT
PILOT'S PITCH AND ROLL CONTROL STICK GRIP SHOWN

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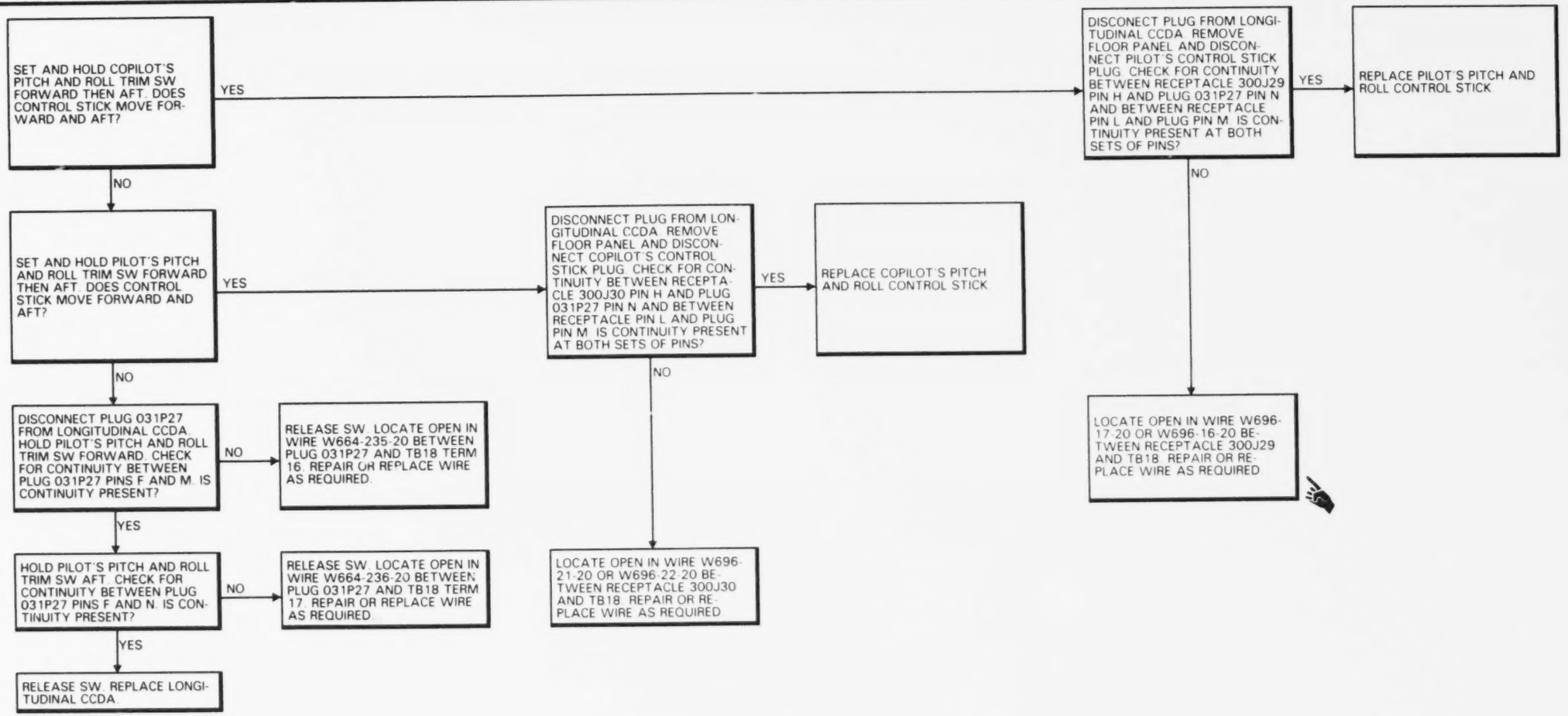
11-3.39 PITCH AND ROLL CONTROL STICK DOES NOT MOVE FORWARD OR AFT WHEN PILOT'S OR COPILOT'S PITCH AND ROLL TRIM SWITCH IS MOVED FORWARD AND AFT (Continued)


SET AND HOLD COPILOT'S PITCH AND ROLL TRIM SW FORWARD THEN AFT. DOES CONTROL STICK MOVE FORWARD AND AFT?
YES
DISCONECT PLUG FROM LONGITUDINAL CCDA. REMOVE FLOOR PANEL AND DISCONNECT PILOT'S CONTROL STICK PLUG. CHECK FOR CONTINUITY BETWEEN RECEPTACLE 300J29 PIN H AND PLUG 031P27 PIN N AND BETWEEN RECEPTACLE PIN L AND PLUG PIN M. IS CONTINUITY PRESENT AT BOTH SETS OF PINS?
YES
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK
NO
NO
SET AND HOLD PILOT'S PITCH AND ROLL TRIM SW FORWARD THEN AFT. DOES CONTROL STICK MOVE FORWARD AND AFT?
YES
DISCONNECT PLUG FROM LONGITUDINAL CCDA. REMOVE FLOOR PANEL AND DISCONNECT COPILOT'S CONTROL STICK PLUG. CHECK FOR CONTINUITY BETWEEN RECEPTACLE 300J30 PIN H AND PLUG 031P27 PIN N AND BETWEEN RECEPTACLE PIN L AND PLUG PIN M. IS CONTINUITY PRESENT AT BOTH SETS OF PINS?
YES
REPLACE COPILOT'S PITCH AND ROLL CONTROL STICK
NO
NO
DISCONNECT PLUG 031P27 FROM LONGITUDINAL CCDA. HOLD PILOT'S PITCH AND ROLL TRIM SW FORWARD. CHECK FOR CONTINUITY BETWEEN PLUG 031P27 PINS F AND M. IS CONTINUITY PRESENT?
NO
RELEASE SW. LOCATE OPEN IN WIRE W664-235-20 BETWEEN PLUG 031P27 AND TB18 TERM 16. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
HOLD PILOT'S PITCH AND ROLL TRIM SW AFT. CHECK FOR CONTINUITY BETWEEN PLUG 031P27 PINS F AND N. IS CONTINUITY PRESENT?
NO
RELEASE SW. LOCATE OPEN IN WIRE W664-236-20 BETWEEN PLUG 031P27 AND TB18 TERM 17. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
RELEASE SW. REPLACE LONGITUDINAL CCDA.
LOCATE OPEN IN WIRE W696-17-20 OR W696-16-20 BETWEEN RECEPTACLE 300J29 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED
LOCATE OPEN IN WIRE W696-21-20 OR W696-22-20 BETWEEN RECEPTACLE 300J30 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

11-3.40 AFCS COMPUTER BITE INDICATES 6, 9, OR 18

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

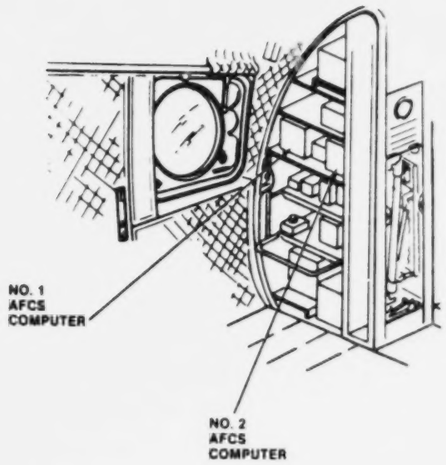
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

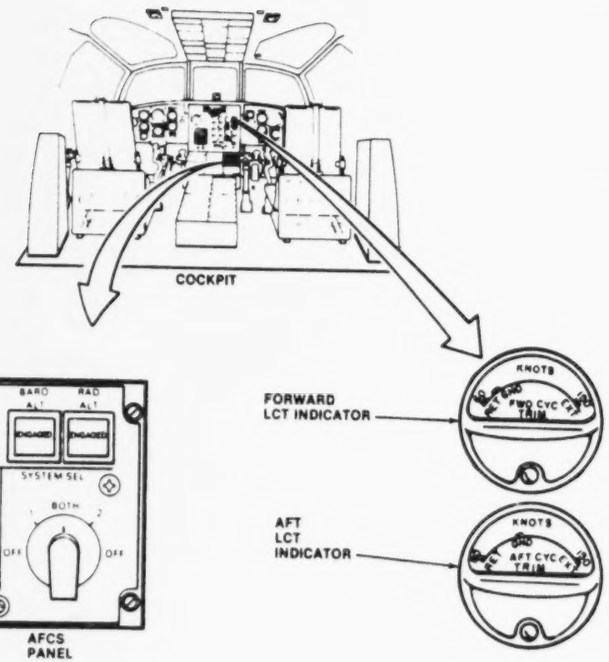
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On





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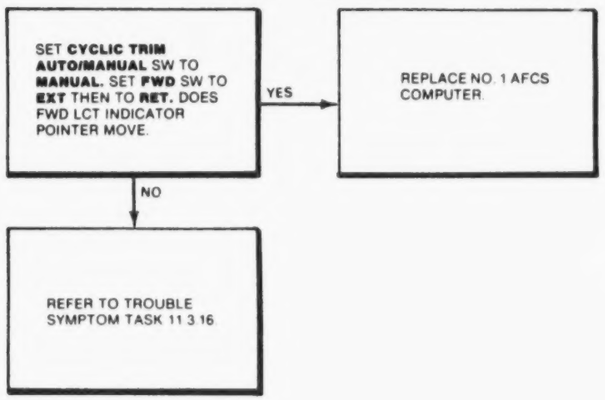
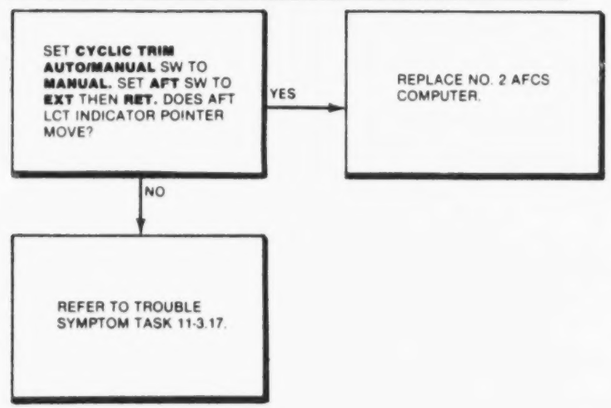
11-3.40 AFCS COMPUTER BITE INDICATES 6, 9, OR 18 (Continued)

NO. 1 AFCS COMPUTER BITE INDICATES 6, 9, OR 18.


SET **CYCLIC TRIM AUTO/MANUAL** SW TO **MANUAL.** SET **FWD** SW TO **EXT** THEN TO **RET.** DOES FWD LCT INDICATOR POINTER MOVE.
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11 3 16

NO. 2 AFCS COMPUTER BITE INDICATES 6, 9, OR 18.


SET **CYCLIC TRIM AUTO/MANUAL** SW TO **MANUAL.** SET **AFT** SW TO **EXT** THEN **RET.** DOES AFT LCT INDICATOR POINTER MOVE?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.17.

END OF TASK

11-3.41 AFCS COMPUTER BITE INDICATES 48

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

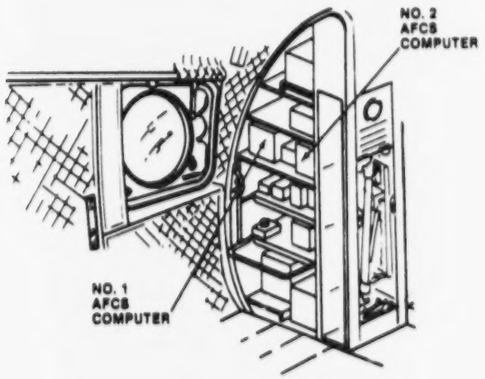
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

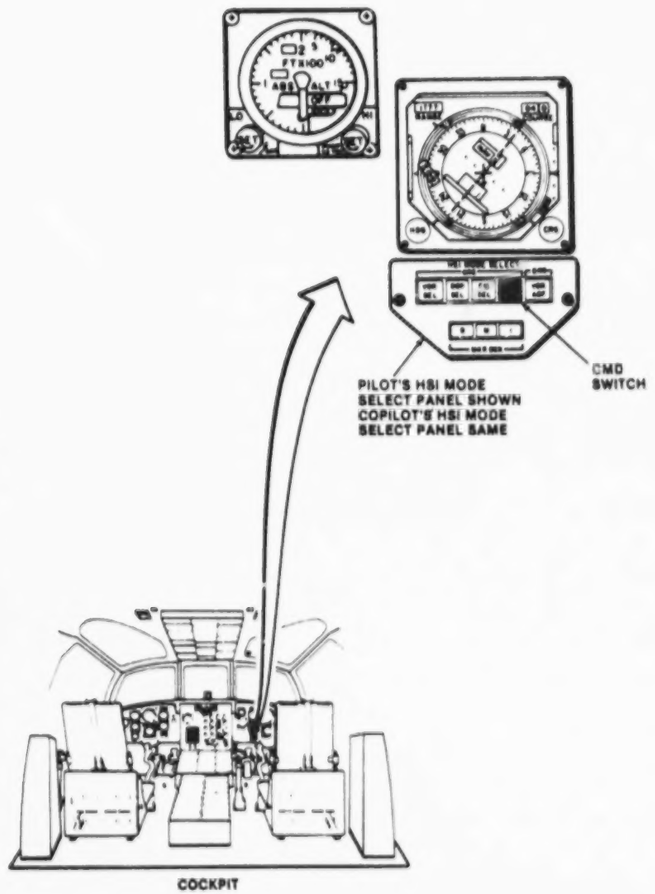
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use





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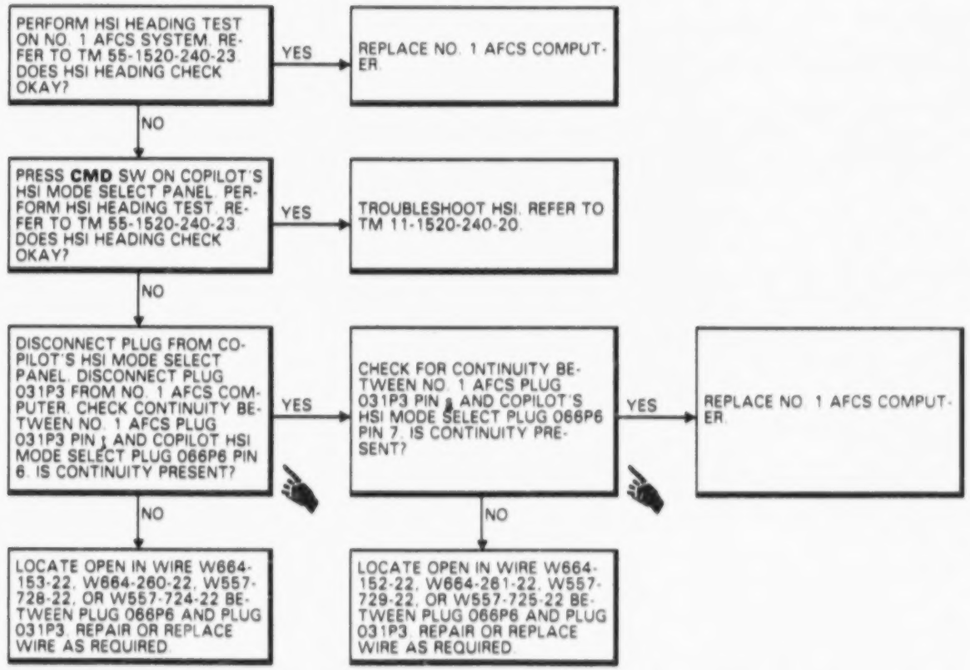
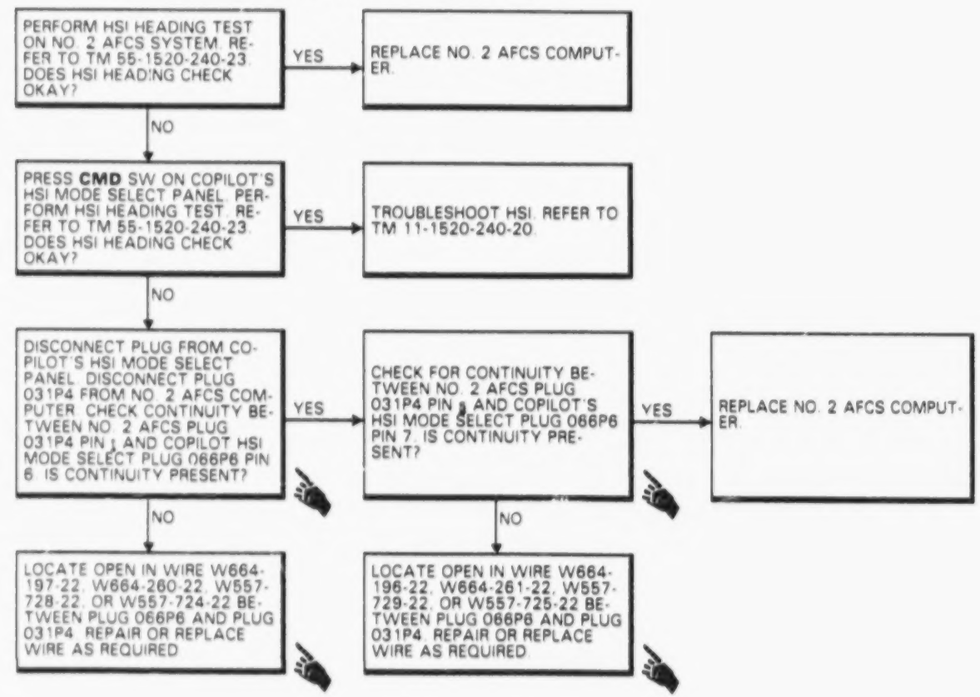
NO. 1 AFCS COMPUTER BITE INDICATES 48


PERFORM HSI HEADING TEST ON NO. 1 AFCS SYSTEM. REFER TO TM 55-1520-240-23. DOES HSI HEADING CHECK OKAY?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
PRESS **CMD** SW ON COPILOT'S HSI MODE SELECT PANEL. PERFORM HSI HEADING TEST. REFER TO TM 55-1520-240-23. DOES HSI HEADING CHECK OKAY?
YES
TROUBLESHOOT HSI. REFER TO TM 11-1520-240-20.
NO
DISCONNECT PLUG FROM COPILOT'S HSI MODE SELECT PANEL. DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. CHECK CONTINUITY BETWEEN NO. 1 AFCS PLUG 031P3 PIN 1 AND COPILOT HSI MODE SELECT PLUG 066P6 PIN 6. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN NO. 1 AFCS PLUG 031P3 PIN 8 AND COPILOT'S HSI MODE SELECT PLUG 066P6 PIN 7. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
LOCATE OPEN IN WIRE W664-153-22, W664-260-22, W557-728-22, OR W557-724-22 BETWEEN PLUG 066P6 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-152-22, W664-261-22, W557-729-22, OR W557-725-22 BETWEEN PLUG 066P6 AND PLUG 031P3. REPAIR OR REPLACE WIRE AS REQUIRED.

NO. 2 AFCS COMPUTER BITE INDICATES 48


PERFORM HSI HEADING TEST ON NO. 2 AFCS SYSTEM. REFER TO TM 55-1520-240-23. DOES HSI HEADING CHECK OKAY?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
PRESS **CMD** SW ON COPILOT'S HSI MODE SELECT PANEL. PERFORM HSI HEADING TEST. REFER TO TM 55-1520-240-23. DOES HSI HEADING CHECK OKAY?
YES
TROUBLESHOOT HSI. REFER TO TM 11-1520-240-20.
NO
DISCONNECT PLUG FROM COPILOT'S HSI MODE SELECT PANEL. DISCONNECT PLUG 031P4 FROM NO. 2 AFCS COMPUTER. CHECK CONTINUITY BETWEEN NO. 2 AFCS PLUG 031P4 PIN 1 AND COPILOT HSI MODE SELECT PLUG 066P6 PIN 6. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN NO. 2 AFCS PLUG 031P4 PIN 8 AND COPILOT'S HSI MODE SELECT PLUG 066P6 PIN 7. IS CONTINUITY PRESENT?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
LOCATE OPEN IN WIRE W664-197-22, W664-260-22, W557-728-22, OR W557-724-22 BETWEEN PLUG 066P6 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-196-22, W664-261-22, W557-729-22, OR W557-725-22 BETWEEN PLUG 066P6 AND PLUG 031P4. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.42 AFCS COMPUTER BITE INDICATES 70-74

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

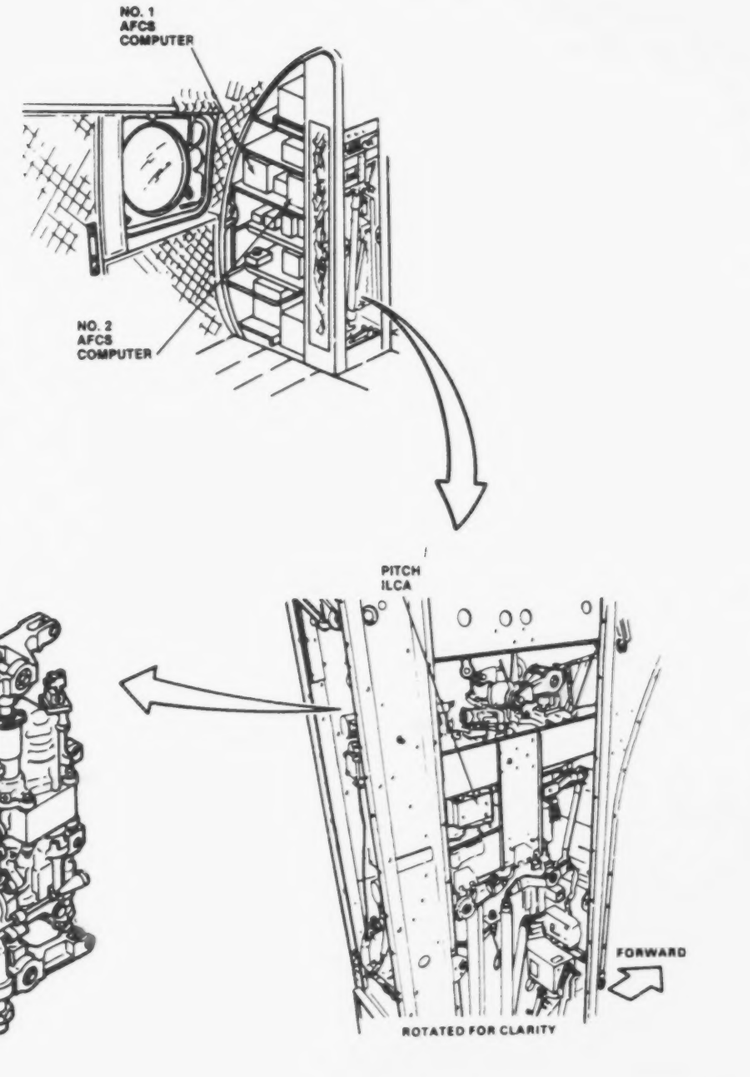
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



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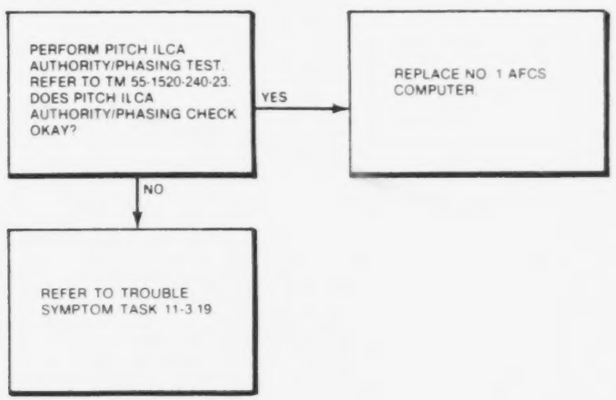
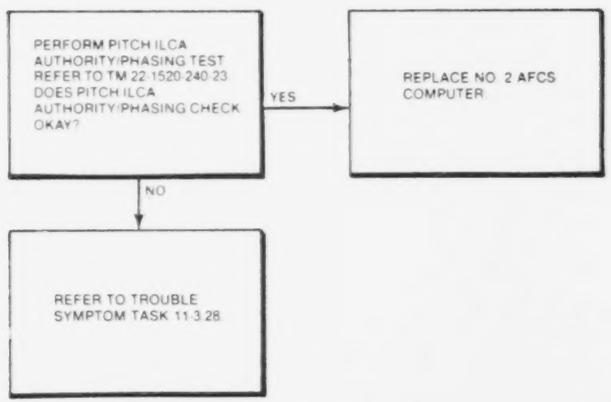
11-3.42 AFCS COMPUTER BITE INDICATES 70-74 (Continued)

NO. 1 AFCS COMPUTER BITE INDICATES 70-74.


PERFORM PITCH ILCA AUTHORITY/PHASING TEST. REFER TO TM 55-1520-240-23. DOES PITCH ILCA AUTHORITY/PHASING CHECK OKAY?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.19

NO. 2 AFCS COMPUTER BITE INDICATES 70-74.


PERFORM PITCH ILCA AUTHORITY/PHASING TEST. REFER TO TM 22-1520-240-23. DOES PITCH ILCA AUTHORITY/PHASING CHECK OKAY?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.28.

END OF TASK

11-3.43 NO. 1 AFCS COMPUTER BITE INDICATES 85 OR 86

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

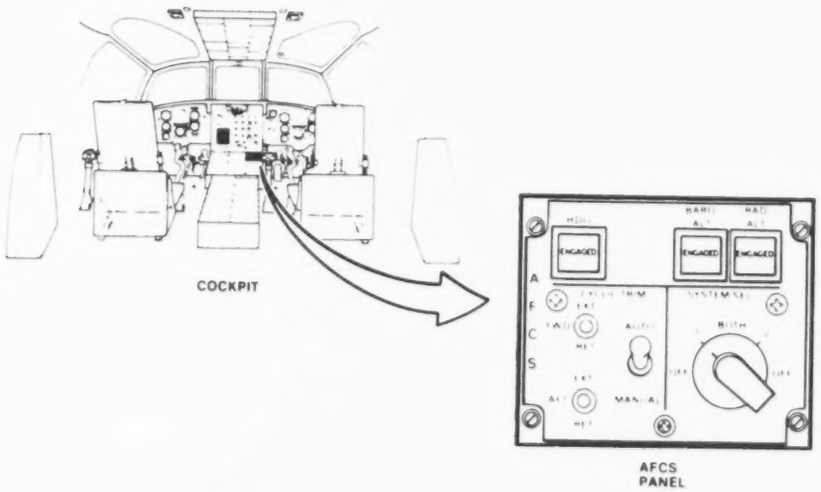
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



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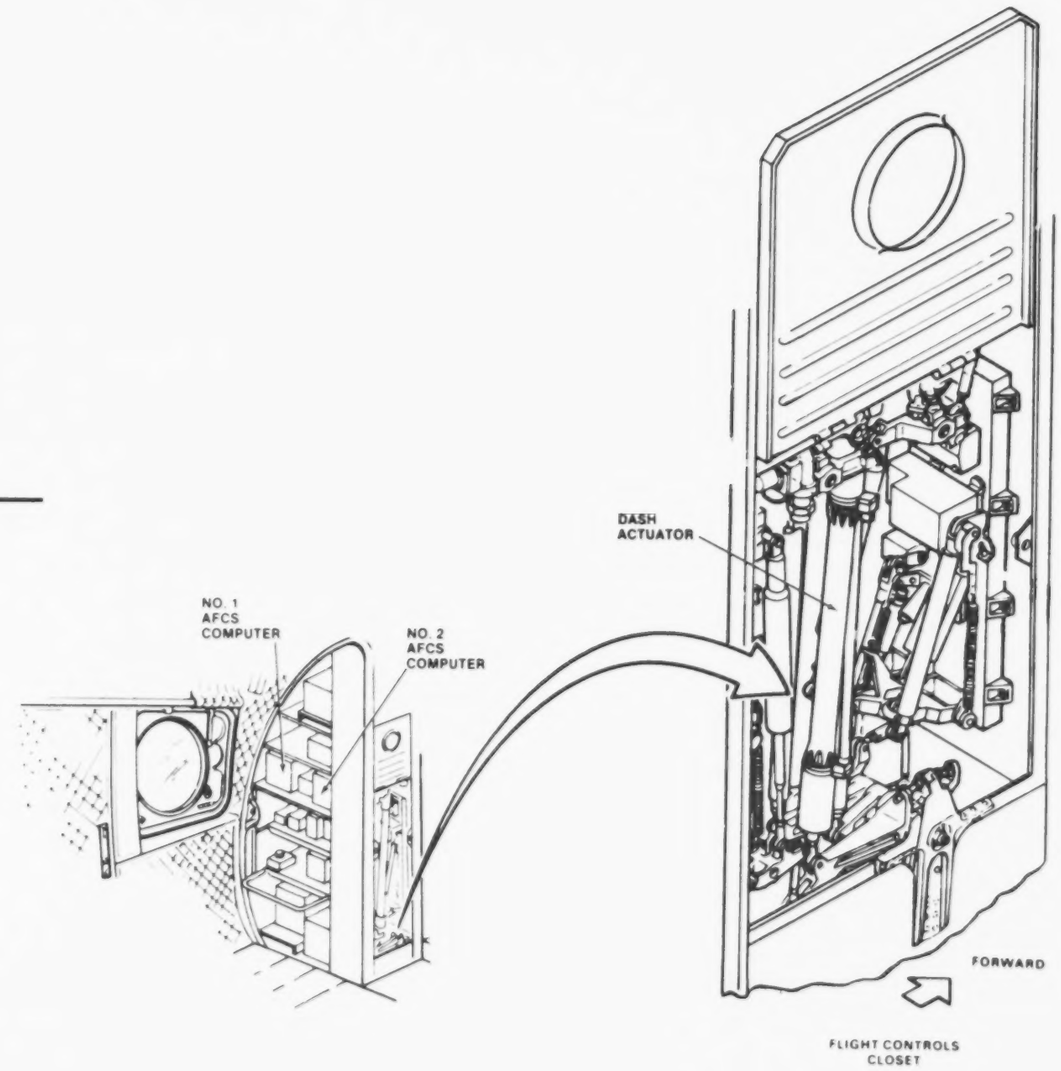

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11-3.43 NO. 1 AFCS COMPUTER BITE INDICATES 85 OR 86 (Continued)

DISCONNECT PLUG 031P19 FROM DASH ACTUATOR RECEPTACLE J1. CHECK FOR CONTINUITY BETWEEN PINS 4 AND 8, AND PINS 5 AND 8 ON RECEPTACLE J1. IS CONTINUITY PRESENT?

NO → PERFORM DASH ACTUATOR OUTPUT MOTION TEST. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?

YES → REPLACE DASH ACTUATOR 031A12.

NO → SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO NO. 1. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS.

SELECT SWITCH POSITIONS		
A-SELECT SWITCH	**B-SELECT** SWITCH	RESISTANCE (OHMS)
A-102	B-103	LESS THAN 200
A-90	B-73	1800 TO 2200
A-73	B-91	LESS THAN 1900

ARE ALL RESISTANCE VALUES PRESENT?

YES → CHECK FOR GROUND ON NO. 1 DASH ACTUATOR PLUG 031P19 PIN 8. IS GROUND PRESENT?

YES → REPLACE NO. 1 DASH ACTUATOR.

NO → LOCATE OPEN IN WIRE W664-GD223A20N BETWEEN DASH ACTUATOR PLUG AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → DISCONNECT PLUG 031P19 FROM NO. 1 DASH ACTUATOR. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P19 PINS FOR THAT POSITION AS FOLLOWS.

SELECT SWITCH POSITIONS		
A-SELECT SWITCH	**B-SELECT** SWITCH	PLUG 031P19 PINS JUMPERED
A-102	B-103	2 AND 3
A-90	B-73	5 AND 4
A-73	B-91	4 AND 6

DOES TEST SET METER READ CONTINUITY?

YES → REPLACE NO. 1 DASH ACTUATOR.

NO → REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P3 PINS AND PLUG 031P19 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS.

SELECT SWITCH POSITION		PLUG 031P3 PIN	PLUG 031P19 PIN	WIRE NO
A-102	B-103	HH	2	W664-165-20
		JJ	3	W664-164-20
A-90	B-73	V	5	W664-162-20
		C	4	W664-217-20 OR W664-161-20
A-73	B-91	C	4	W664-217-20 OR W664-161-20
		W	6	W664-163-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

END OF TASK

11-3.44 NO. 2 AFCS COMPUTER BITE INDICATES 85 OR 86

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

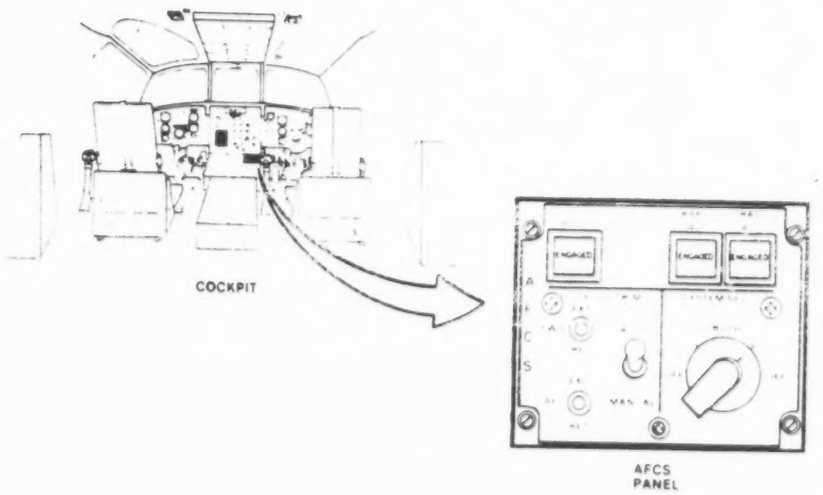
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

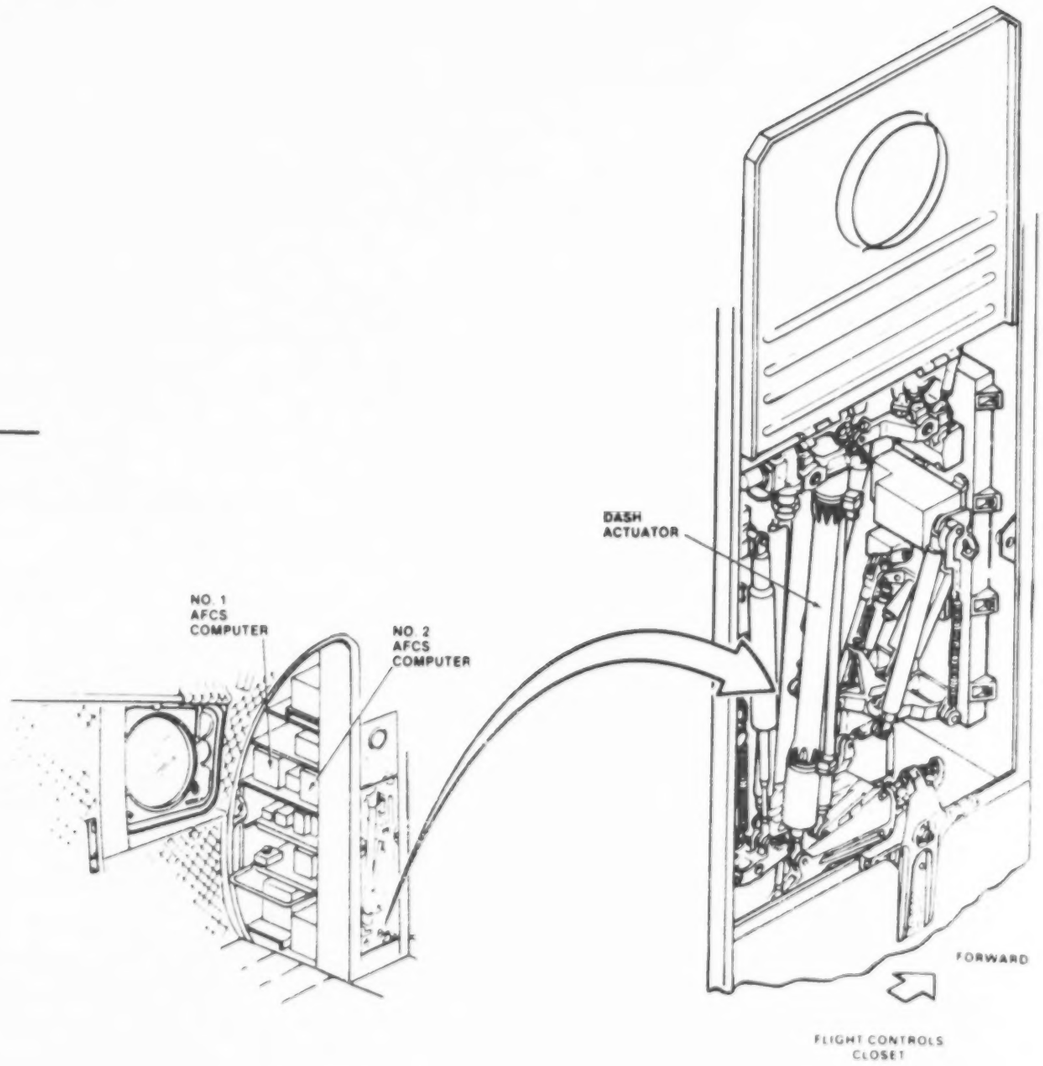
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use





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11-3.44 NO. 2 AFCS COMPUTER BITE INDICATES 85 OR 86 (Continued)

DISCONNECT PLUG 031P20 FROM DASH ACTUATOR RECEPTACLE J2. CHECK FOR CONTINUITY BETWEEN PINS 4 AND 8, AND PINS 5 AND 8 ON RECEPTACLE J2. IS CONTINUITY PRESENT?

NO → PERFORM DASH ACTUATOR OUTPUT MOTION TEST. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?

YES → REPLACE NO. 2 AFCS COMPUTER

NO → SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO NO. 2. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		
A-SELECT SWITCH	**B-SELECT** SWITCH	RESISTANCE (OHMS)
A-102	B-103	LESS THAN 200
A-90	B-73	1800 TO 2200
A-73	B-91	LESS THAN 1900

ARE ALL RESISTANCE VALUES PRESENT?

YES → CHECK FOR GROUND ON NO. 2 DASH ACTUATOR PLUG 031P20 PIN 8. IS GROUND PRESENT?

YES → REPLACE NO. 2 DASH ACTUATOR

NO → LOCATE OPEN IN WIRE W664-GD223B20N BETWEEN DASH ACTUATOR PLUG AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → DISCONNECT PLUG 031P20 FROM NO. 2 DASH ACTUATOR. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P20 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		
A-SELECT SWITCH	**B-SELECT** SWITCH	PLUG 031P20 PINS JUMPERED
A-102	B-103	2 AND 3
A-90	B-73	5 AND 4
A-73	B-91	4 AND 6

DOES TEST SET METER READ CONTINUITY?

YES → REPLACE NO. 2 DASH ACTUATOR

NO → REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P4 PINS AND PLUG 031P20 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P3 TO PLUG 031P20 PIN		WIRE NO
A-102	B-103	HH	2	W664-209-20
		JJ	3	W664-208-20
A-90	B-73	V	5	W664-206-20
		C	4	W664-220-20 OR W664-205-20
A-73	B-91	C	4	W664-220-20 OR W664-205-20
		W	6	W664-207-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

END OF TASK

11-3.45 NO. 1 AFCS COMPUTER BITE INDICATES 87

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

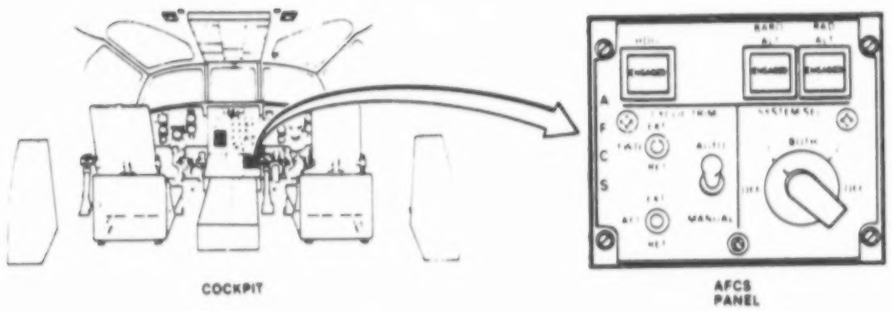
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

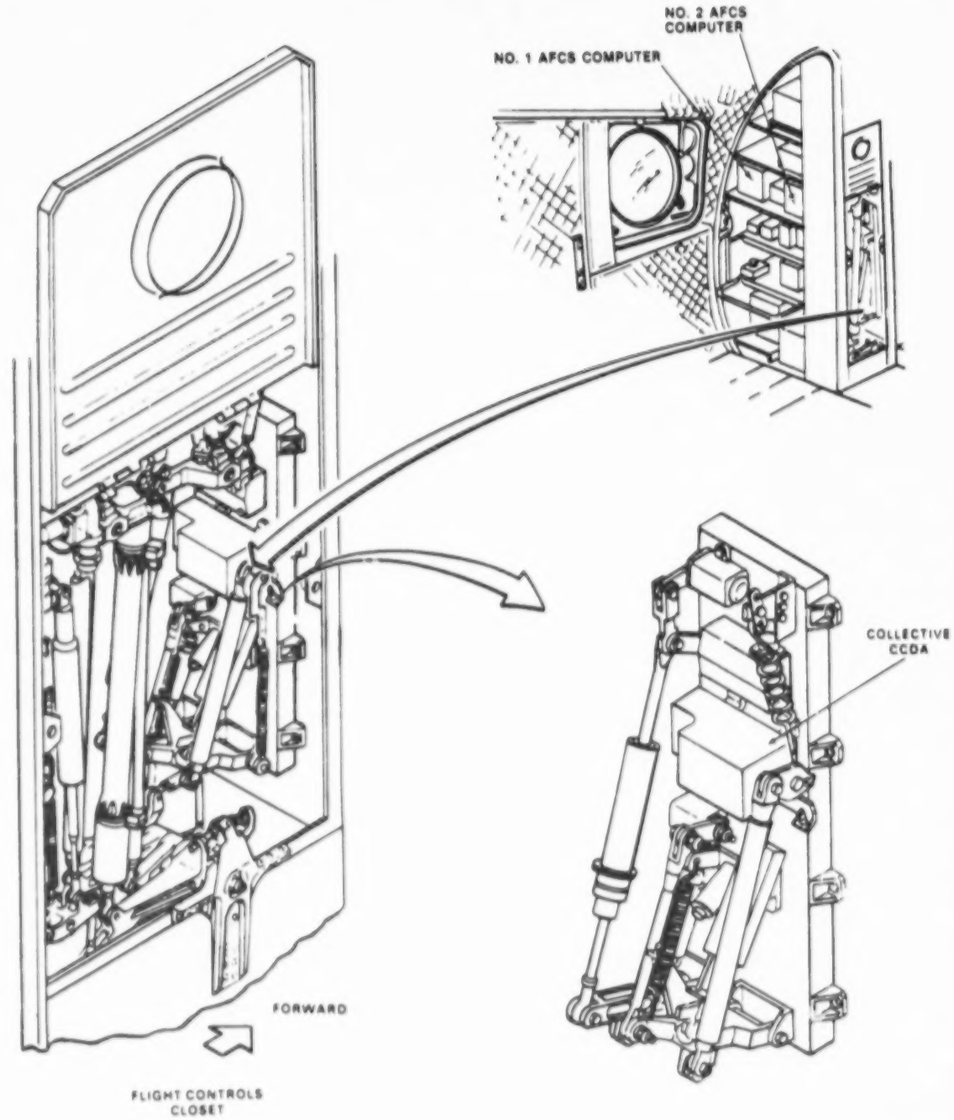
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use





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11-3.45 NO. 1 AFCS COMPUTER BITE INDICATES 87 (Continued)

PERFORM COLLECTIVE CCDA SERVO LOOP OPERATION TEST. REFER TO TM 55-1520-240-23. DOES COLLECTIVE CCDA CHECK OKAY?

NO

YES

REPLACE NO. 1 AFCS COMPUTER.

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO NO. 1. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		
A-SELECT SWITCH	**B-SELECT** SWITCH	RESISTANCE (OHMS)
A-23	B-03	LESS THAN 200
A-24	B-03	LESS THAN 200
A-55	B-54	3800 TO 4000
A-75	B-76	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT TEST SET. CONNECT PLUGS 031P3 AND 031P8 TO AFCS COMPUTER. DISCONNECT PLUG 031P22 FROM CCDA. APPLY ELECTRICAL POWER. CHECK FOR 28VDC ON PLUG 031P22 PINS A(+) AND C(-). IS 28VDC PRESENT?

NO

CHECK FOR GROUND ON PLUG 031P22 PIN C. IS GROUND PRESENT?

NO

LOCATE OPEN IN WIRE W664-GD220C20N BETWEEN PLUG AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

YES

OPEN NO. 1 PDP. CHECK FOR 28VDC BETWEEN COLLECTIVE DRIVER ACTUATOR CB 031CB6 CIRCUIT SIDE AND GROUND. IS 28VDC PRESENT?

NO

REPLACE COLLECTIVE DRIVER ACTUATOR CIRCUIT BREAKER.

YES

LOCATE OPEN IN WIRE W664-199-20 OR W550-112-22 BETWEEN PLUG 031P22 AND CB 031CB6. REPAIR OR REPLACE WIRE AS REQUIRED.

YES

CHECK FOR 115VAC BETWEEN PLUG 031P22 PIN B AND GROUND. IS 115VAC PRESENT?

NO

LOCATE OPEN IN WIRE W664-198-20 OR W550-114-22 BETWEEN PLUG 031P22 AND COLLECTIVE DRIVER ACTUATOR CB 031CB7. REPAIR OR REPLACE WIRE AS REQUIRED.

YES

CHECK FOR 13VAC BETWEEN PLUG 031P22 PIN P AND GROUND. IS 13VAC PRESENT?

NO

LOCATE OPEN IN WIRE W664-202-20 BETWEEN PLUG 031P22 AND TB52 MODULE 5 TERM E. REPAIR OR REPLACE WIRE AS REQUIRED.

YES

REPLACE COLLECTIVE CONTROL DRIVER ACTUATOR.

NO

DISCONNECT PLUG 031P22 FROM COLLECTIVE CONTROL DRIVER ACTUATOR. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P22 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		
A-SELECT SWITCH	**B-SELECT** SWITCH	PLUG 031P22 PINS JUMPERED
A-23	B-03	G TO C
A-24	B-03	H TO C
A-55	B-54	D TO E
A-75	B-76	L TO J

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE COLLECTIVE CONTROL DRIVER ACTUATOR.

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P3, 031P8 PINS AND PLUG 031P22 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P8 TO PLUG 031P22 PIN		WIRE NO.
A-23	B-03	**b**	G	W664-201-20 OR W664-268-20
		FUSELAGE GROUND	C	W664-GD220C20N
		c	H	W664-200-20
A-24	B-03	FUSELAGE GROUND	C	W664-GD220C20N
		PLUG 031P3		
A-55	B-54	E	D	W664-154-20
		D	E	W664-155-20
A-75	B-76	**e**	L	W664-157-20
		f	J	W664-156-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT.

END OF TASK

11-3.46 NO. 1 AFCS COMPUTER BITE INDICATES 89

FAULT ISOLATION PROCEDURE

INITIAL SETUP .

Applicable Configurations:
All

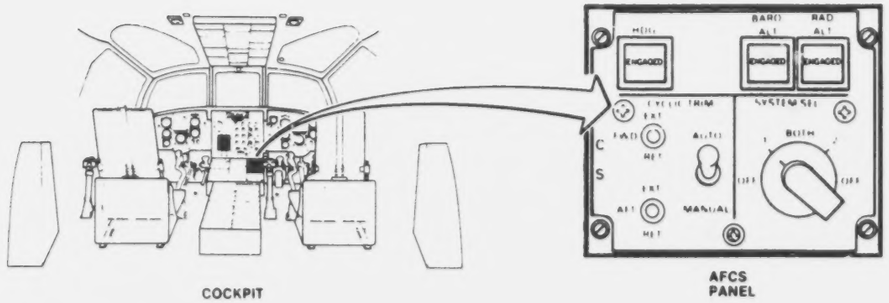
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

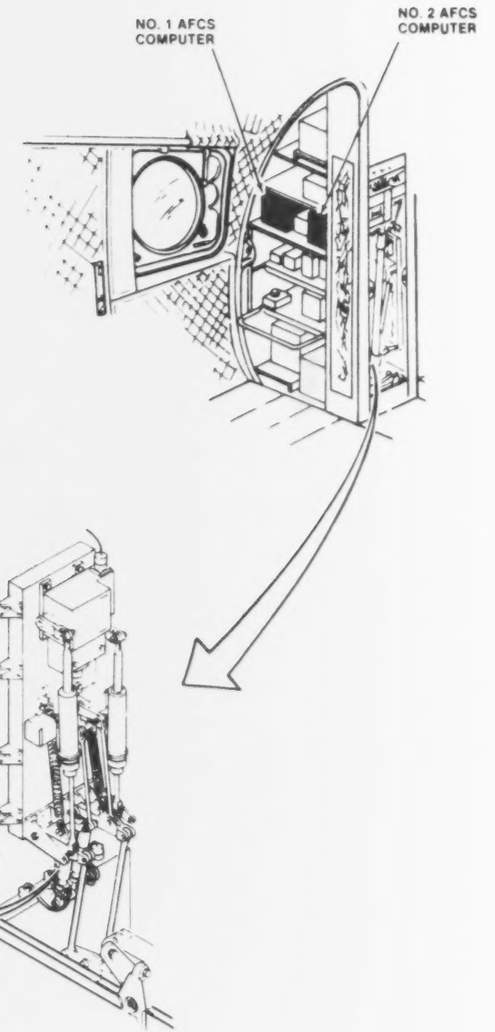
References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



COCKPIT

AFCS PANEL



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11-3.46 NO. 1 AFCS COMPUTER BITE INDICATES 89 (Continued)

PERFORM LONGITUDINAL (PITCH) CPT NULL AND OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES PITCH CPT NULL AND OUTPUT TEST CHECK OKAY?

NO

YES

REPLACE NO. 1 AFCS COMPUTER

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-09	B-08	LESS THAN 200
A-09	B-10	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PITCH CPT PLUG WITH GREEN BAND FROM RECEPTACLE 031J2. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PITCH CPT RECEPTACLE PINS A AND B. DOES TEST SET METER INDICATE CONTINUITY?

YES

NO

LOCATE OPEN IN WIRE W664-22-20, W664-59-20, W664-20-20 OR W664-58-20 FOR PINS A AND B. REPAIR OR REPLACE WIRE AS REQUIRED.

CHECK FOR GROUND ON PITCH CPT RECEPTACLE PIN F. IS GROUND PRESENT?

YES

NO

LOCATE OPEN IN WIRE W664-GD220A20N BETWEEN PITCH CPT RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

REPLACE LONGITUDINAL CPT

NO

DISCONNECT PITCH CPT PLUG WITH RED BAND FROM RECEPTACLE 031J5. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PITCH CPT RECEPTACLE PINS FOR THAT POSITION AS FOLLOWS

SELECT SWITCH POSITIONS		PITCH CPT RECEPTACLE PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-09	B-08	E AND C
A-09	B-10	E AND D

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE PITCH CPT TRANSDUCER

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG AND PITCH CPT RECEPTACLE PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS

SELECT SWITCH POSITION		PLUG 031P8 PIN	PITCH CPT RECEPTACLE PIN	WIRE NO.
A-09	B-08	J	E	W664-10-20
		H	D	W664-9-20
A-09	B-10	J	E	W664-10-20
		K	C	W664-8-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

END OF TASK

11-3.47 NO. 2 AFCS COMPUTER BITE INDICATES 89

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

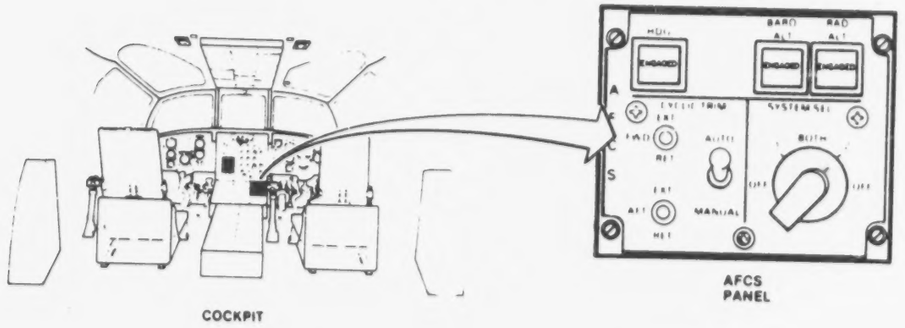
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



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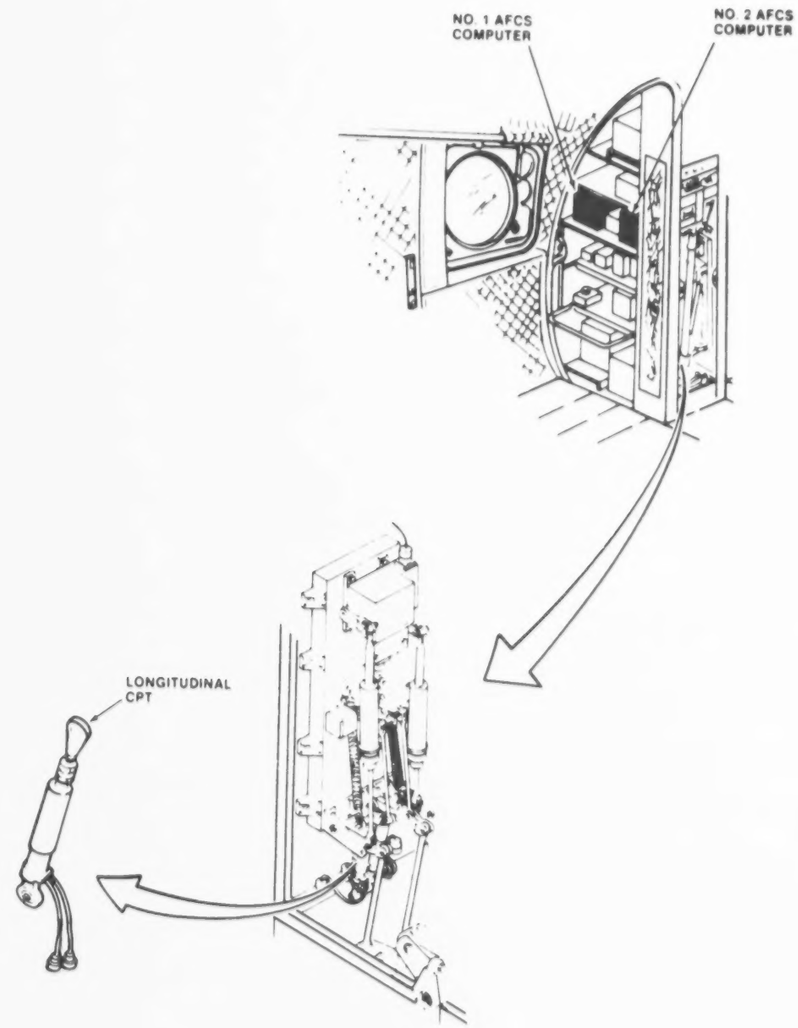

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11-3.47 NO. 2 AFCS COMPUTER BITE INDICATES 89 (Continued)

PERFORM LONGITUDINAL (PITCH) CPT NULL AND OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES PITCH CPT NULL AND OUTPUT TEST CHECK OKAY?

NO

YES

REPLACE NO. 2 AFCS COMPUTER

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SWITCH POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-09	B-08	LESS THAN 200
A-09	B-10	LESS THAN 200

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PITCH CPT PLUG WITH RED BAND FROM RECEPTACLE 031J5. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PITCH CPT PLUG PINS A AND B. DOES TEST SET METER INDICATE CONTINUITY?

YES

CHECK FOR GROUND ON PITCH CPT RECEPTACLE PIN F. IS GROUND PRESENT?

YES

REPLACE LONGITUDINAL CPT

NO

LOCATE OPEN IN WIRE W664-GD220A20N BETWEEN PITCH CPT RECEPTACLE AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED

NO

LOCATE OPEN IN WIRE W664-88-20, W664-120-20, W664-87-20 OR W664-119-20 FOR PINS A AND B. REPAIR OR REPLACE WIRE AS REQUIRED

NO

DISCONNECT PITCH CPT PLUG WITH RED BAND FROM RECEPTACLE 031J5. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PITCH CPT RECEPTACLE PINS FOR THAT POSITION AS FOLLOWS:

SELECT SWITCH POSITIONS		PITCH CPT RECEPTACLE PINS JUMPERED
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-09	B-08	E AND C
A-09	B-10	E AND D

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE PITCH CPT TRANSDUCER

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 AND PITCH CPT RECEPTACLE PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SWITCH POSITION		PLUG 031P10 PIN	PITCH CPT RECEPTACLE PIN	WIRE NO
A-09	B-08	J	E	W664-79-20
		H	D	W664-78-20
A-09	B-10	J	E	W664-79-20
		K	C	W664-77-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

END OF TASK

11-3.48 AFCS COMPUTER BITE INDICATES 95

FAULT ISOLATION PROCEDURE
INITIAL SETUP

Applicable Configurations:
All

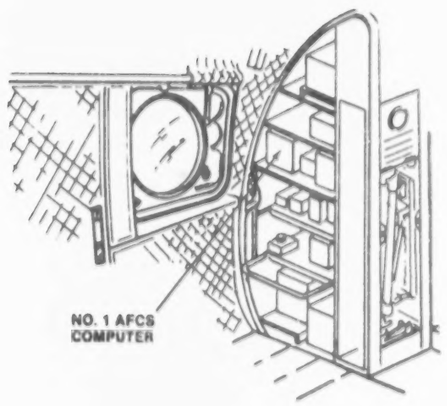
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

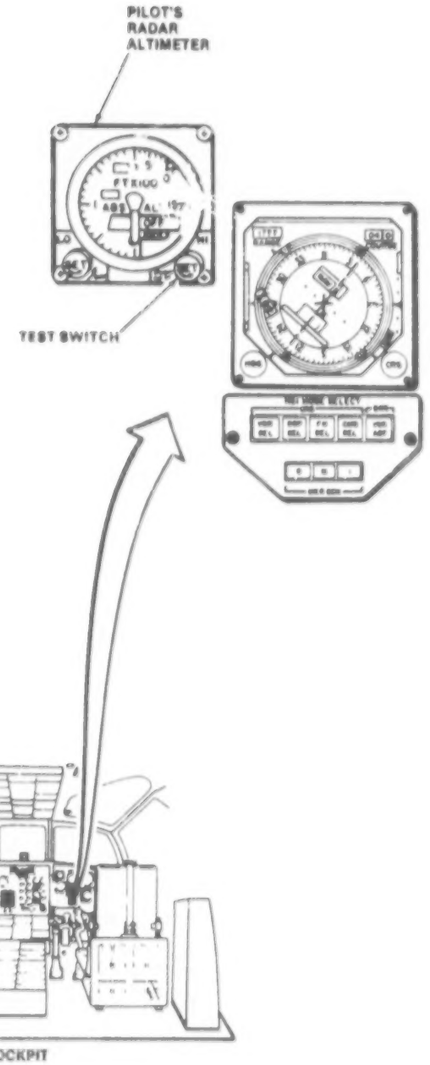
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

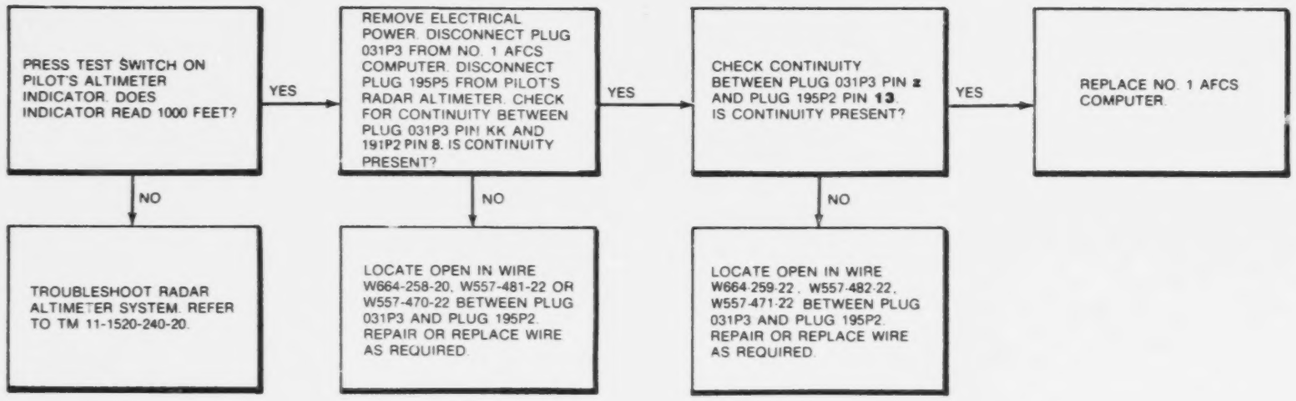
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





11-3.48 AFCS COMPUTER BITE INDICATES 95 (Continued)


PRESS TEST SWITCH ON PILOT'S ALTIMETER INDICATOR. DOES INDICATOR READ 1000 FEET?
YES
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P3 FROM NO. 1 AFCS COMPUTER. DISCONNECT PLUG 195P5 FROM PILOT'S RADAR ALTIMETER. CHECK FOR CONTINUITY BETWEEN PLUG 031P3 PIN KK AND 191P2 PIN 8. IS CONTINUITY PRESENT?
YES
CHECK CONTINUITY BETWEEN PLUG 031P3 PIN z AND PLUG 195P2 PIN 13. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
TROUBLESHOOT RADAR ALTIMETER SYSTEM. REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-258-20, W557-481-22 OR W557-470-22 BETWEEN PLUG 031P3 AND PLUG 195P2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-259-22, W557-482-22, W557-471-22 BETWEEN PLUG 031P3 AND PLUG 195P2. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

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11-3.49 AFCS PITCH STABILIZATION ERRATIC OR OSCILLATORY

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

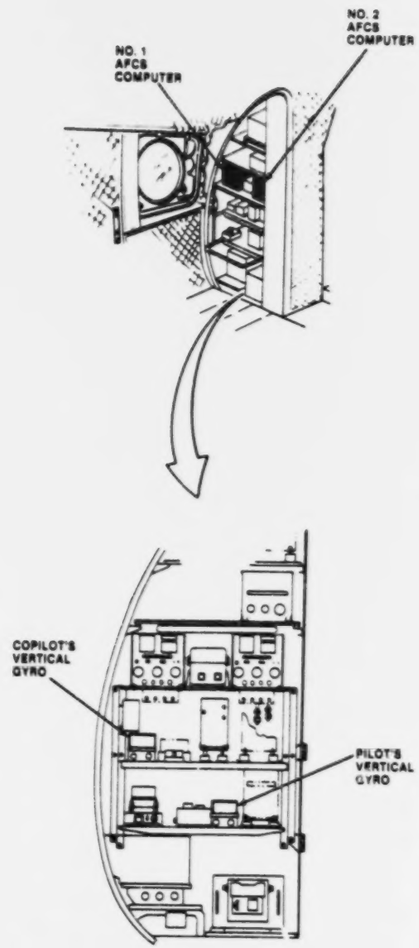
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



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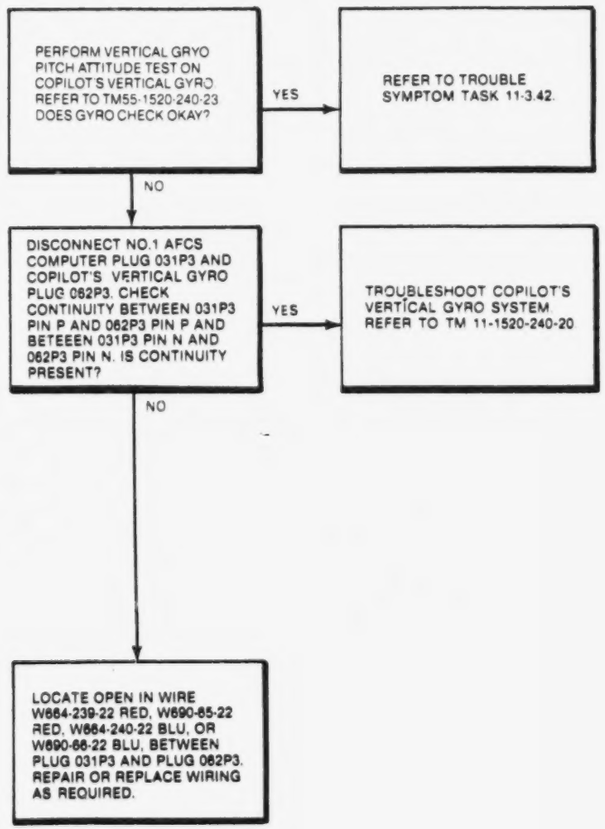
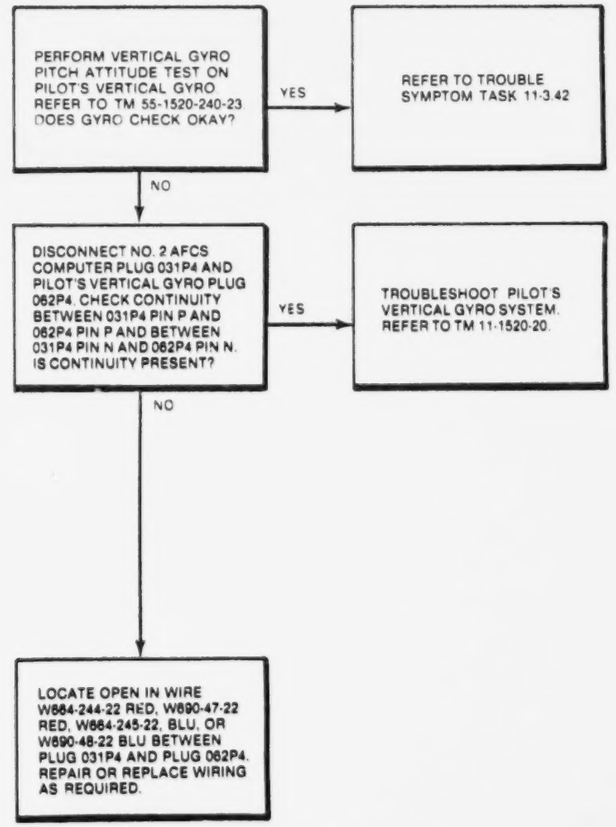
11-3.49 AFCS PITCH STABILIZATION ERRATIC OR OSCILLATORY (Continued)

NO. 1 AFCS PITCH STABILIZATION ERRATIC OR OSCILLATORY


PERFORM VERTICAL GRYO PITCH ATTITUDE TEST ON COPILOT'S VERTICAL GYRO REFER TO TM55-1520-240-23 DOES GYRO CHECK OKAY?
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.42.
NO
DISCONNECT NO.1 AFCS COMPUTER PLUG 031P3 AND COPILOT'S VERTICAL GYRO PLUG 062P3. CHECK CONTINUITY BETWEEN 031P3 PIN P AND 062P3 PIN P AND BETEEEN 031P3 PIN N AND 062P3 PIN N. IS CONTINUITY PRESENT?
YES
TROUBLESHOOT COPILOT'S VERTICAL GYRO SYSTEM REFER TO TM 11-1520-240-20
NO
LOCATE OPEN IN WIRE W664-239-22 RED, W690-65-22 RED, W664-240-22 BLU, OR W690-66-22 BLU, BETWEEN PLUG 031P3 AND PLUG 062P3. REPAIR OR REPLACE WIRING AS REQUIRED.

NO. 2 AFCS PITCH STABILIZATION ERRATIC OR OSCILLATORY


PERFORM VERTICAL GYRO PITCH ATTITUDE TEST ON PILOT'S VERTICAL GYRO REFER TO TM 55-1520-240-23 DOES GYRO CHECK OKAY?
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.42
NO
DISCONNECT NO. 2 AFCS COMPUTER PLUG 031P4 AND PILOT'S VERTICAL GYRO PLUG 062P4. CHECK CONTINUITY BETWEEN 031P4 PIN P AND 062P4 PIN P AND BETWEEN 031P4 PIN N AND 062P4 PIN N. IS CONTINUITY PRESENT?
YES
TROUBLESHOOT PILOT'S VERTICAL GYRO SYSTEM. REFER TO TM 11-1520-20.
NO
LOCATE OPEN IN WIRE W664-244-22 RED, W690-47-22 RED, W664-245-22, BLU, OR W690-48-22 BLU BETWEEN PLUG 031P4 AND PLUG 062P4. REPAIR OR REPLACE WIRING AS REQUIRED.

END OF TASK

11-3.50 NO. 1 AFCS PITCH ATTITUDE/AIR SPEED HOLD WEAK OR INOPERATIVE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

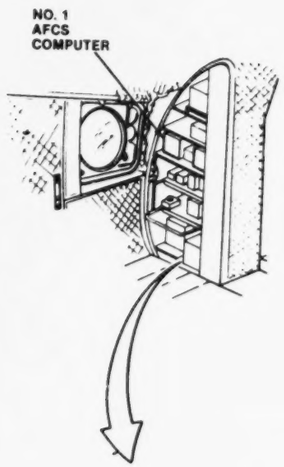
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

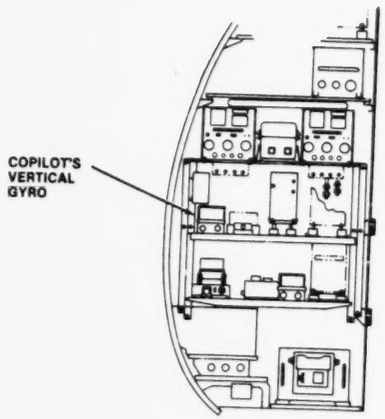
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use





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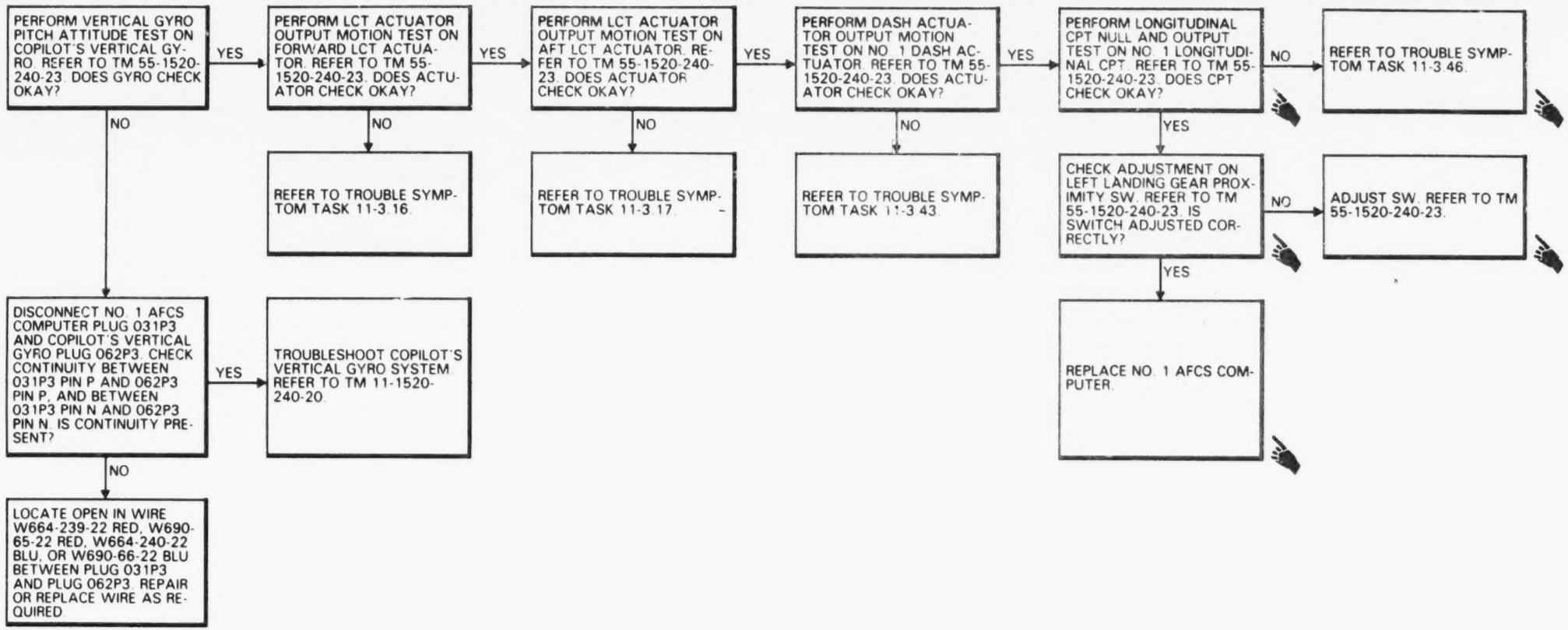

PERFORM VERTICAL GYRO PITCH ATTITUDE TEST ON COPILOT'S VERTICAL GYRO. REFER TO TM 55-1520-240-23. DOES GYRO CHECK OKAY?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON FORWARD LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON AFT LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM DASH ACTUATOR OUTPUT MOTION TEST ON NO. 1 DASH ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM LONGITUDINAL CPT NULL AND OUTPUT TEST ON NO. 1 LONGITUDINAL CPT. REFER TO TM 55-1520-240-23. DOES CPT CHECK OKAY?
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.46.
YES
CHECK ADJUSTMENT ON LEFT LANDING GEAR PROXIMITY SW. REFER TO TM 55-1520-240-23. IS SWITCH ADJUSTED CORRECTLY?
NO
ADJUST SW. REFER TO TM 55-1520-240-23.
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.16.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.17.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.43.
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND COPILOT'S VERTICAL GYRO PLUG 062P3. CHECK CONTINUITY BETWEEN 031P3 PIN P AND 062P3 PIN P, AND BETWEEN 031P3 PIN N AND 062P3 PIN N. IS CONTINUITY PRESENT?
YES
TROUBLESHOOT COPILOT'S VERTICAL GYRO SYSTEM. REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-239-22 RED, W690-65-22 RED, W664-240-22 BLU, OR W690-66-22 BLU BETWEEN PLUG 031P3 AND PLUG 062P3. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

11-3.51 NO. 2 AFCS PITCH ATTITUDE/AIR SPEED HOLD WEAK OR INOPERATIVE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

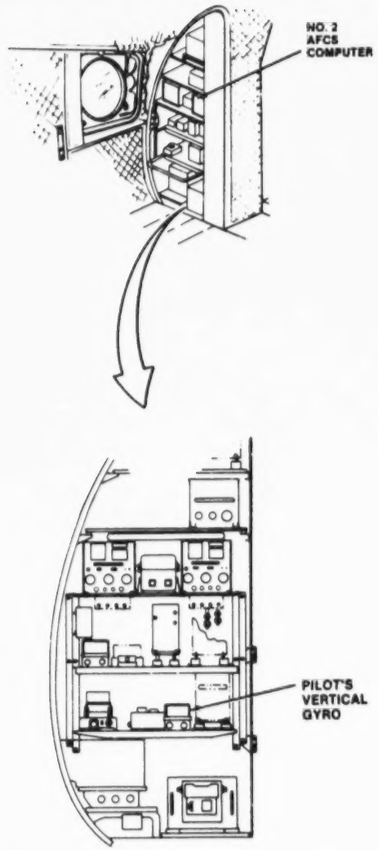
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



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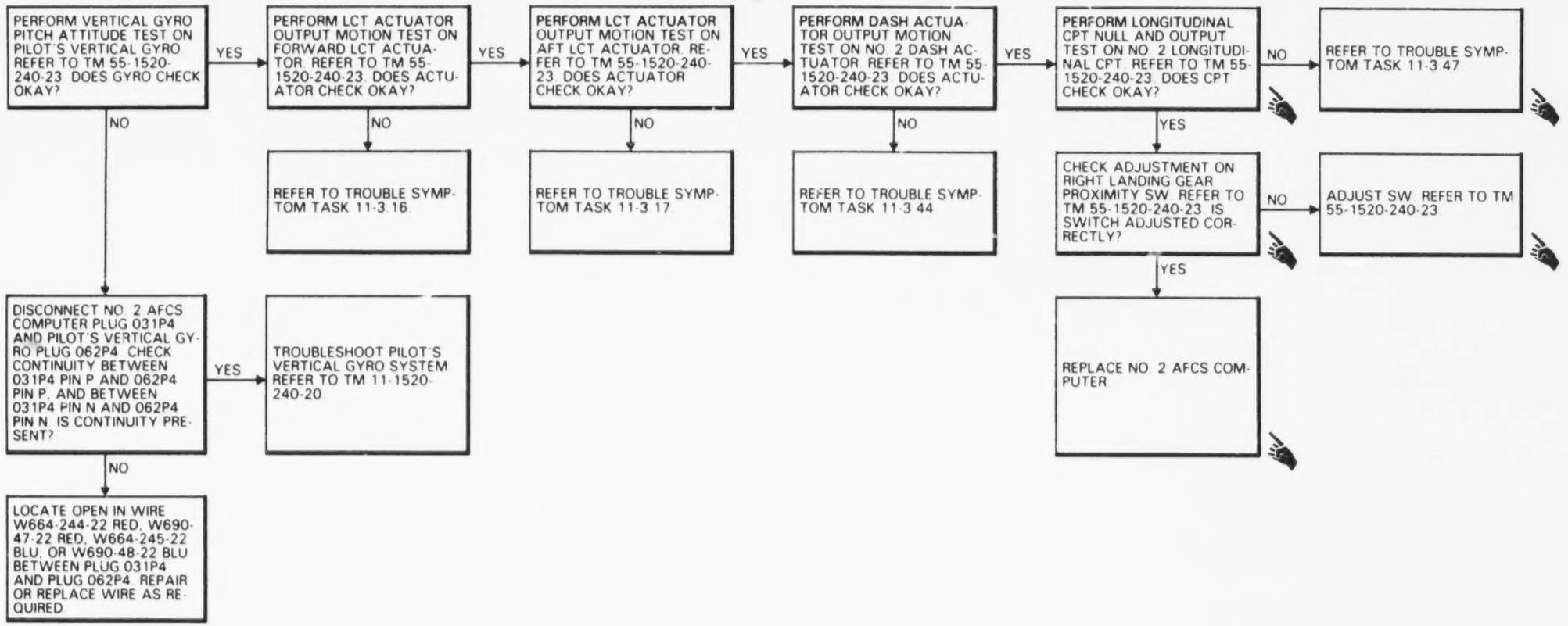

PERFORM VERTICAL GYRO PITCH ATTITUDE TEST ON PILOT'S VERTICAL GYRO REFER TO TM 55-1520-240-23. DOES GYRO CHECK OKAY?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON FORWARD LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM LCT ACTUATOR OUTPUT MOTION TEST ON AFT LCT ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM DASH ACTUATOR OUTPUT MOTION TEST ON NO. 2 DASH ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM LONGITUDINAL CPT NULL AND OUTPUT TEST ON NO. 2 LONGITUDINAL CPT. REFER TO TM 55-1520-240-23. DOES CPT CHECK OKAY?
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.47.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.16.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.17.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.44.
YES
CHECK ADJUSTMENT ON RIGHT LANDING GEAR PROXIMITY SW. REFER TO TM 55-1520-240-23. IS SWITCH ADJUSTED CORRECTLY?
NO
ADJUST SW. REFER TO TM 55-1520-240-23.
YES
REPLACE NO. 2 AFCS COMPUTER
NO
DISCONNECT NO. 2 AFCS COMPUTER PLUG 031P4 AND PILOT'S VERTICAL GYRO PLUG 062P4. CHECK CONTINUITY BETWEEN 031P4 PIN P AND 062P4 PIN P, AND BETWEEN 031P4 PIN N AND 062P4 PIN N. IS CONTINUITY PRESENT?
YES
TROUBLESHOOT PILOT'S VERTICAL GYRO SYSTEM REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-244-22 RED, W690-47-22 RED, W664-245-22 BLU, OR W690-48-22 BLU BETWEEN PLUG 031P4 AND PLUG 062P4. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

11-3.52 AFCS LONGITUDINAL CONTROL POSITION OUT OF TRIM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

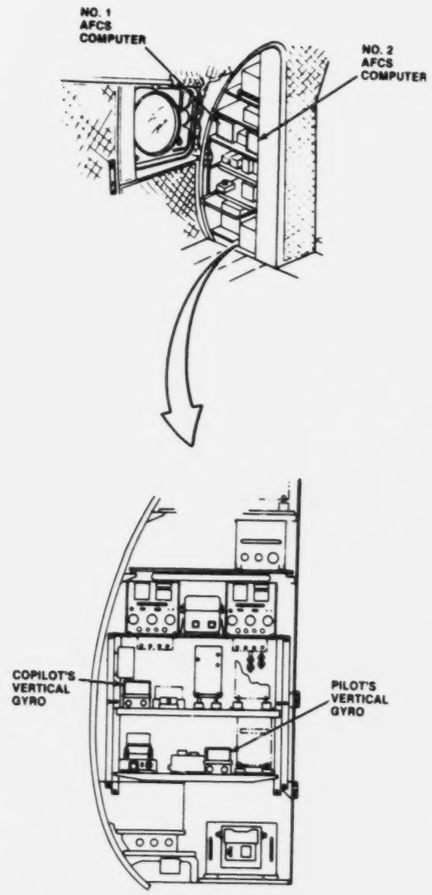
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



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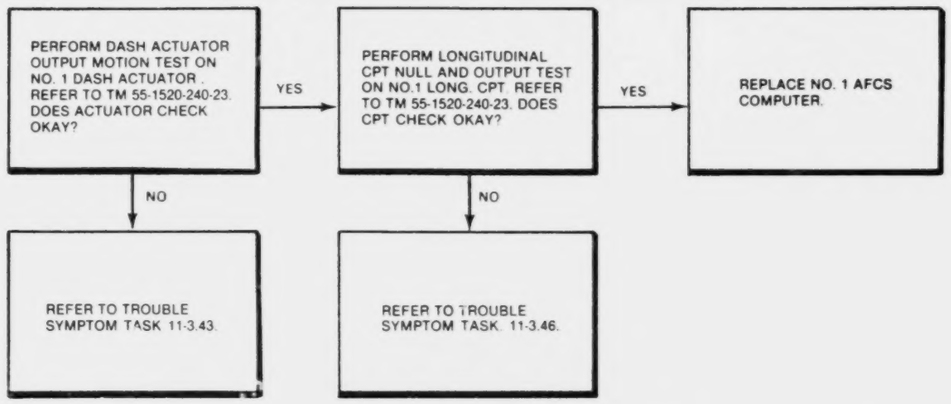
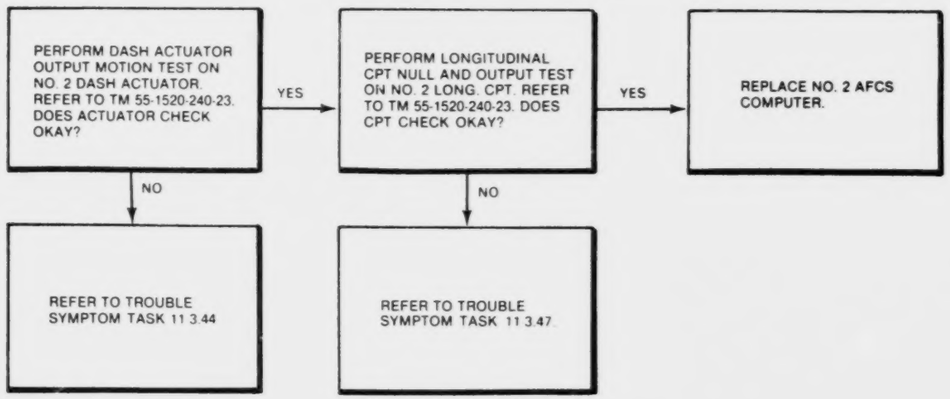
11-3.52 AFCS LONGITUDINAL CONTROL POSITION OUT OF TRIM (Continued)

NO. 1 AFCS LONGITUDINAL CONTROL POSITION OUT OF TRIM


PERFORM DASH ACTUATOR OUTPUT MOTION TEST ON NO. 1 DASH ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM LONGITUDINAL CPT NULL AND OUTPUT TEST ON NO.1 LONG. CPT. REFER TO TM 55-1520-240-23. DOES CPT CHECK OKAY?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.43.
NO
REFER TO TROUBLE SYMPTOM TASK. 11-3.46.

NO. 2 AFCS LONGITUDINAL CONTROL POSITION OUT OF TRIM


PERFORM DASH ACTUATOR OUTPUT MOTION TEST ON NO. 2 DASH ACTUATOR. REFER TO TM 55-1520-240-23. DOES ACTUATOR CHECK OKAY?
YES
PERFORM LONGITUDINAL CPT NULL AND OUTPUT TEST ON NO. 2 LONG. CPT. REFER TO TM 55-1520-240-23. DOES CPT CHECK OKAY?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.44
NO
REFER TO TROUBLE SYMPTOM TASK. 11-3.47.

END OF TASK

11-3.53 AFCS ROLL STABILIZATION ERRATIC/OSCILLATORY OR ROLL ATTITUDE HOLD WEAK OR INOPERATIVE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

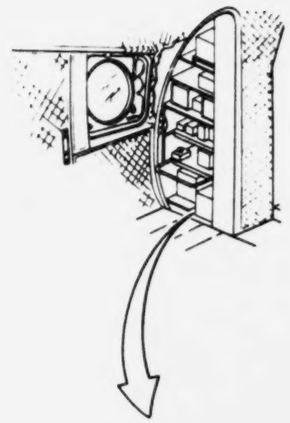
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

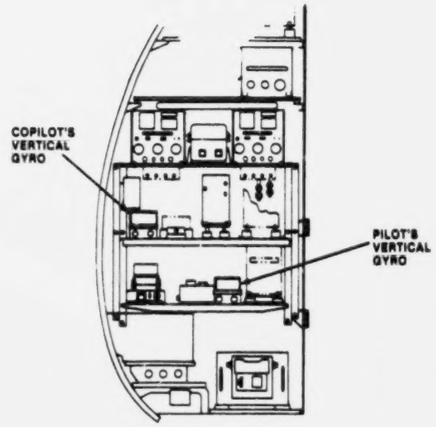
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-249-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use





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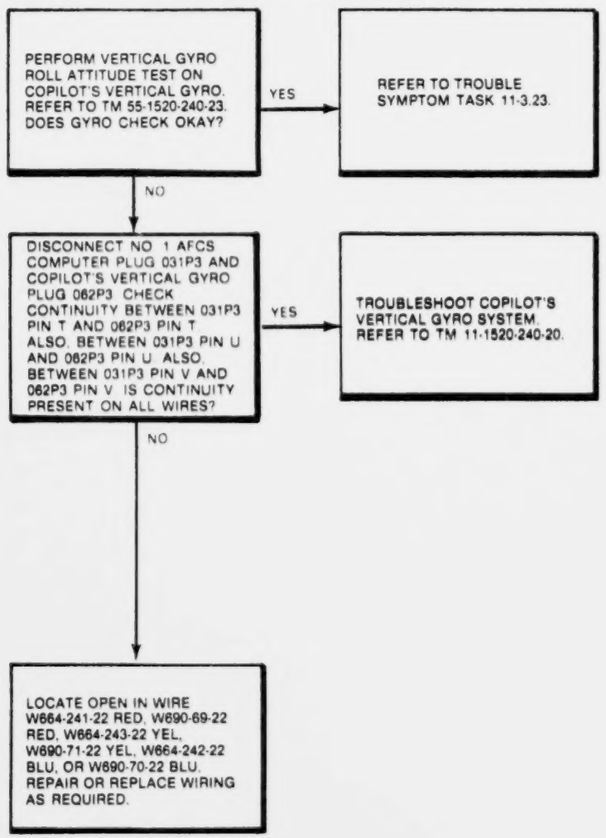
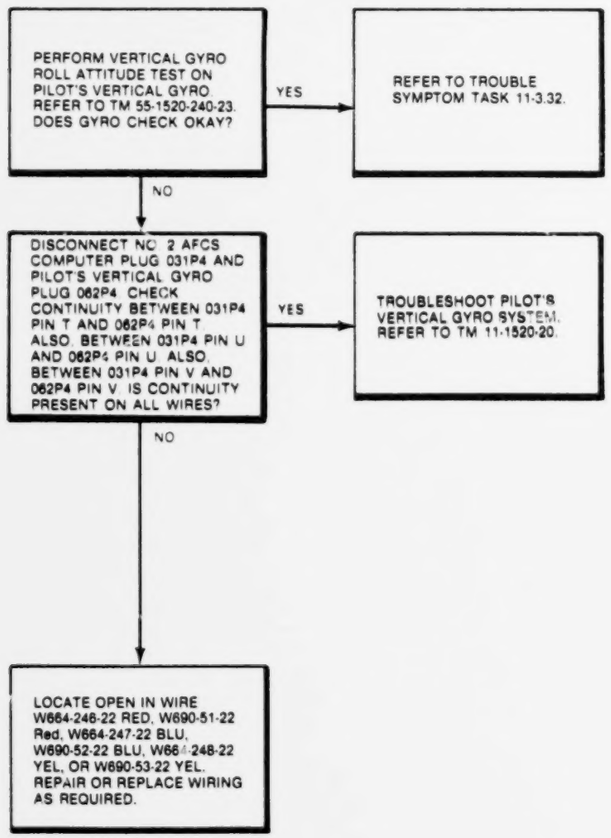
11-3.53 AFCS ROLL STABILIZATION ERRATIC/OSCILLATORY OR ROLL ATTITUDE HOLD WEAK OR INOPERATIVE (Continued)

NO. 1 AFCS ROLL STABILIZATION ERRATIC/ OSCILLATORY OR ROLL ATTITUDE HOLD WEAK OR INOPERATIVE


PERFORM VERTICAL GYRO ROLL ATTITUDE TEST ON COPILOT'S VERTICAL GYRO. REFER TO TM 55-1520-240-23. DOES GYRO CHECK OKAY?
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.23.
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND COPILOT'S VERTICAL GYRO PLUG 062P3. CHECK CONTINUITY BETWEEN 031P3 PIN T AND 062P3 PIN T. ALSO, BETWEEN 031P3 PIN U AND 062P3 PIN U. ALSO, BETWEEN 031P3 PIN V AND 062P3 PIN V. IS CONTINUITY PRESENT ON ALL WIRES?
YES
TROUBLESHOOT COPILOT'S VERTICAL GYRO SYSTEM. REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-241-22 RED, W690-69-22 RED, W664-243-22 YEL, W690-71-22 YEL, W664-242-22 BLU, OR W690-70-22 BLU. REPAIR OR REPLACE WIRING AS REQUIRED.

NO. 2 AFCS ROLL STABILIZATION ERRATIC/ OSCILLATORY OR ROLL ATTITUDE HOLD WEAK OR INOPERATIVE


PERFORM VERTICAL GYRO ROLL ATTITUDE TEST ON PILOT'S VERTICAL GYRO. REFER TO TM 55-1520-240-23. DOES GYRO CHECK OKAY?
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.32.
NO
DISCONNECT NO. 2 AFCS COMPUTER PLUG 031P4 AND PILOT'S VERTICAL GYRO PLUG 062P4. CHECK CONTINUITY BETWEEN 031P4 PIN T AND 062P4 PIN T. ALSO, BETWEEN 031P4 PIN U AND 062P4 PIN U. ALSO, BETWEEN 031P4 PIN V AND 062P4 PIN V. IS CONTINUITY PRESENT ON ALL WIRES?
YES
TROUBLESHOOT PILOT'S VERTICAL GYRO SYSTEM. REFER TO TM 11-1520-20.
NO
LOCATE OPEN IN WIRE W664-246-22 RED, W690-51-22 Red, W664-247-22 BLU, W690-52-22 BLU, W664-248-22 YEL, OR W690-53-22 YEL. REPAIR OR REPLACE WIRING AS REQUIRED.

END OF TASK

11-3.54 HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE (BOTH SYSTEMS)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

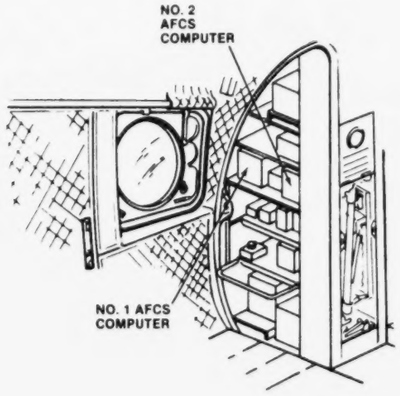
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



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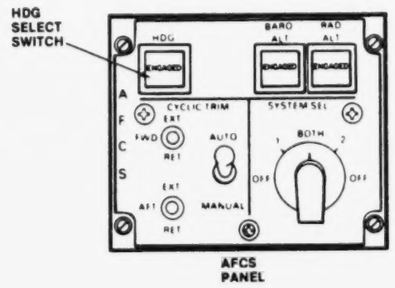
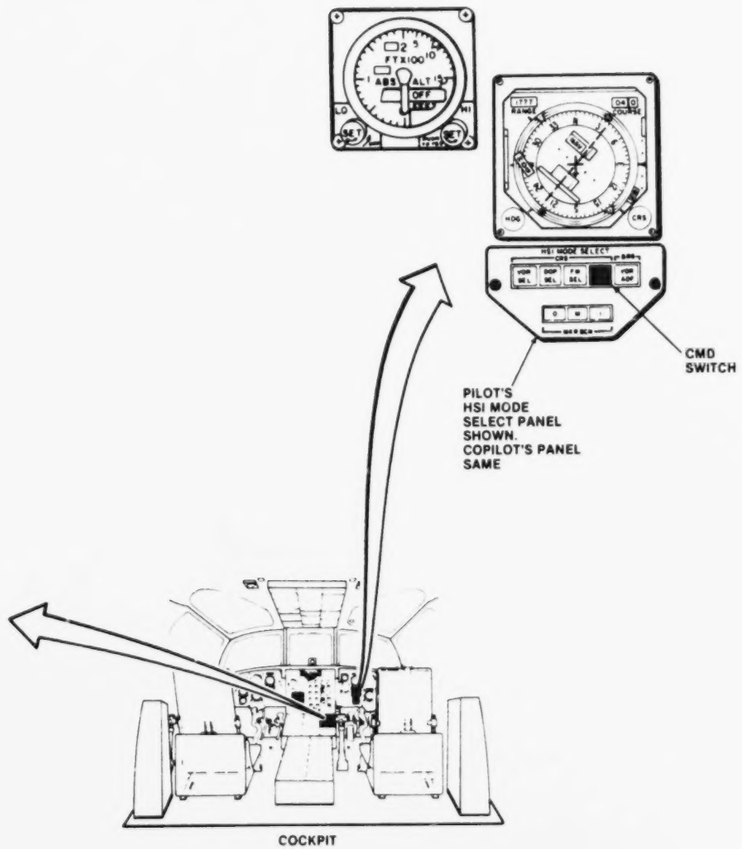


AFCS PANEL



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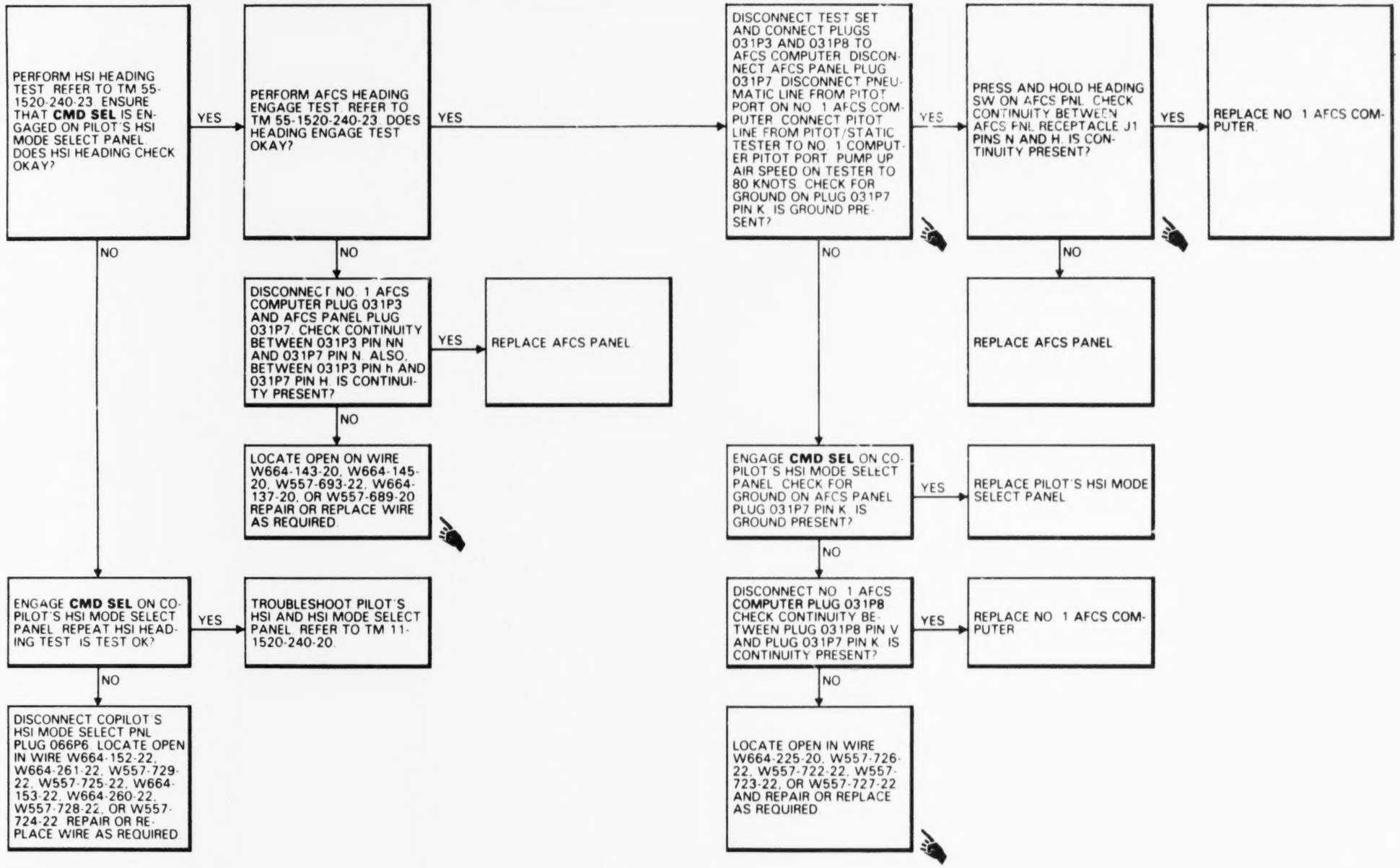

PERFORM HSI HEADING TEST. REFER TO TM 55-1520-240-23. ENSURE THAT **CMD SEL** IS ENGAGED ON PILOT'S HSI MODE SELECT PANEL. DOES HSI HEADING CHECK OKAY?
YES
PERFORM AFCS HEADING ENGAGE TEST. REFER TO TM 55-1520-240-23. DOES HEADING ENGAGE TEST OKAY?
YES
DISCONNECT TEST SET AND CONNECT PLUGS 031P3 AND 031P8 TO AFCS COMPUTER. DISCONNECT AFCS PANEL PLUG 031P7. DISCONNECT PNEUMATIC LINE FROM PITOT PORT ON NO. 1 AFCS COMPUTER. CONNECT PITOT LINE FROM PITOT/STATIC TESTER TO NO. 1 COMPUTER PITOT PORT. PUMP UP AIR SPEED ON TESTER TO 80 KNOTS. CHECK FOR GROUND ON PLUG 031P7 PIN K. IS GROUND PRESENT?
YES
PRESS AND HOLD HEADING SW ON AFCS PNL. CHECK CONTINUITY BETWEEN AFCS PNL RECEPTACLE J1 PINS N AND H. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND AFCS PANEL PLUG 031P7. CHECK CONTINUITY BETWEEN 031P3 PIN NN AND 031P7 PIN N. ALSO, BETWEEN 031P3 PIN h AND 031P7 PIN H. IS CONTINUITY PRESENT?
YES
REPLACE AFCS PANEL
NO
LOCATE OPEN ON WIRE W664-143-20, W664-145-20, W557-693-22, W664-137-20, OR W557-689-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE AFCS PANEL
NO
ENGAGE **CMD SEL** ON CO-PILOT'S HSI MODE SELECT PANEL. REPEAT HSI HEADING TEST. IS TEST OK?
YES
TROUBLESHOOT PILOT'S HSI AND HSI MODE SELECT PANEL. REFER TO TM 11-1520-240-20.
NO
DISCONNECT COPILOT'S HSI MODE SELECT PNL PLUG 066P6. LOCATE OPEN IN WIRE W664-152-22, W664-261-22, W557-729-22, W557-725-22, W664-153-22, W664-260-22, W557-728-22, OR W557-724-22. REPAIR OR REPLACE WIRE AS REQUIRED.
ENGAGE **CMD SEL** ON CO-PILOT'S HSI MODE SELECT PANEL. CHECK FOR GROUND ON AFCS PANEL PLUG 031P7 PIN K. IS GROUND PRESENT?
YES
REPLACE PILOT'S HSI MODE SELECT PANEL
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P8. CHECK CONTINUITY BETWEEN PLUG 031P8 PIN V AND PLUG 031P7 PIN K. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER
NO
LOCATE OPEN IN WIRE W664-225-20, W557-726-22, W557-722-22, W557-723-22, OR W557-727-22 AND REPAIR OR REPLACE AS REQUIRED.

END OF TASK

11-3.55 NO. 1 AFCS HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

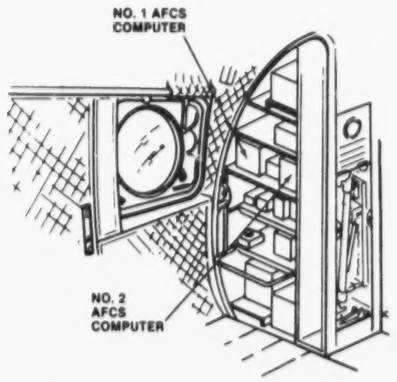
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



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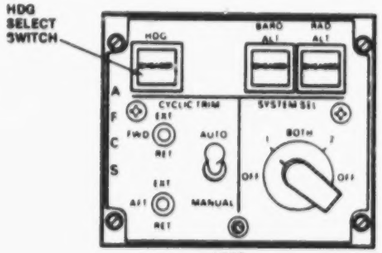

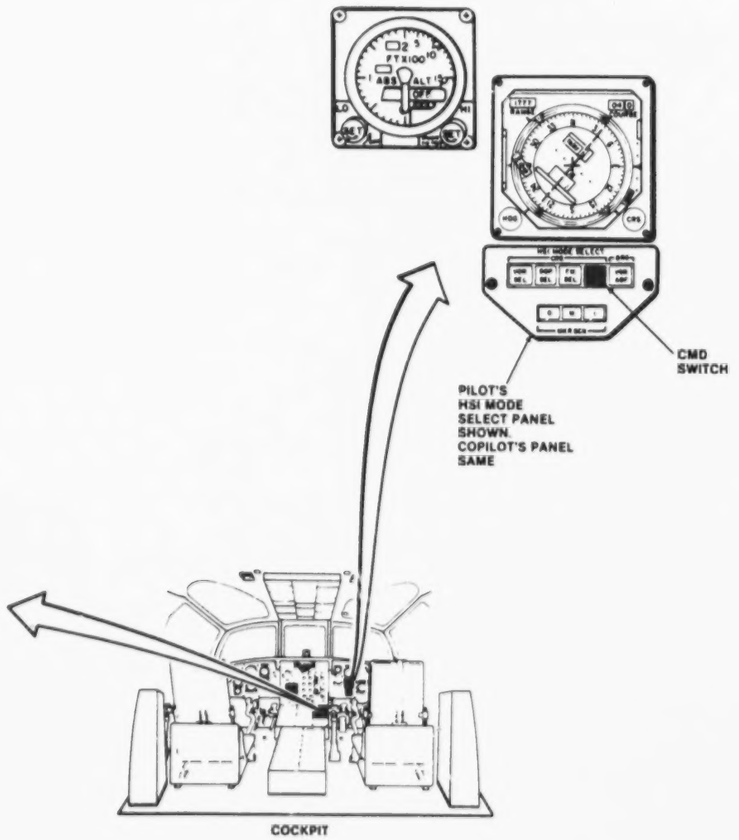

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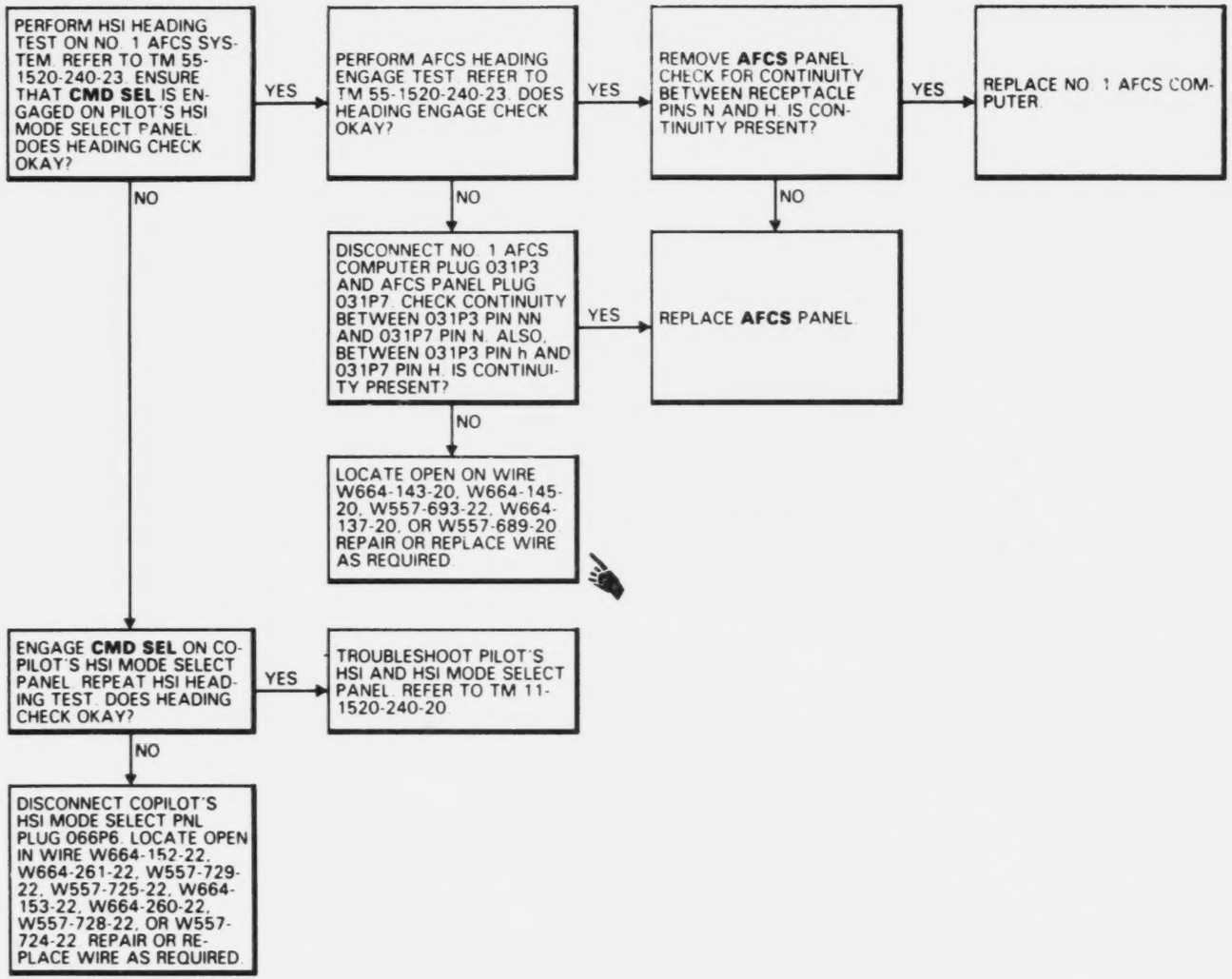
11-3.55 NO. 1 AFCS HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE (Continued)


PERFORM HSI HEADING TEST ON NO. 1 AFCS SYSTEM. REFER TO TM 55-1520-240-23. ENSURE THAT **CMD SEL** IS ENGAGED ON PILOT'S HSI MODE SELECT PANEL. DOES HEADING CHECK OKAY?
YES
PERFORM AFCS HEADING ENGAGE TEST. REFER TO TM 55-1520-240-23. DOES HEADING ENGAGE CHECK OKAY?
YES
REMOVE **AFCS** PANEL. CHECK FOR CONTINUITY BETWEEN RECEPTACLE PINS N AND H. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND AFCS PANEL PLUG 031P7. CHECK CONTINUITY BETWEEN 031P3 PIN NN AND 031P7 PIN N. ALSO, BETWEEN 031P3 PIN h AND 031P7 PIN H. IS CONTINUITY PRESENT?
YES
REPLACE **AFCS** PANEL.
NO
LOCATE OPEN ON WIRE W664-143-20, W664-145-20, W557-693-22, W664-137-20, OR W557-689-20. REPAIR OR REPLACE WIRE AS REQUIRED.
ENGAGE **CMD SEL** ON COPILOT'S HSI MODE SELECT PANEL. REPEAT HSI HEADING TEST. DOES HEADING CHECK OKAY?
YES
TROUBLESHOOT PILOT'S HSI AND HSI MODE SELECT PANEL. REFER TO TM 11-1520-240-20.
NO
DISCONNECT COPILOT'S HSI MODE SELECT PNL PLUG 066P6. LOCATE OPEN IN WIRE W664-152-22, W664-261-22, W557-729-22, W557-725-22, W664-153-22, W664-260-22, W557-728-22, OR W557-724-22. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.56 NO. 2 AFCS HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

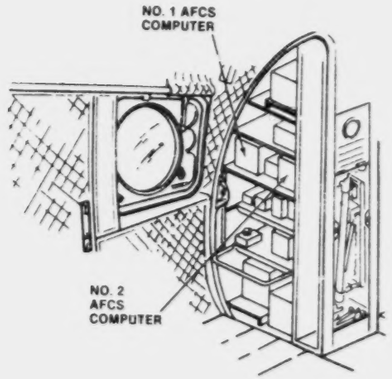
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use



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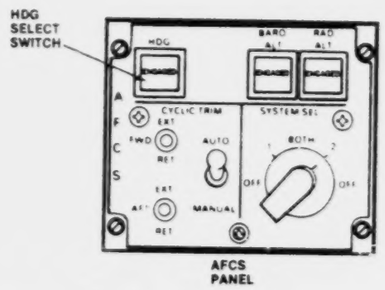

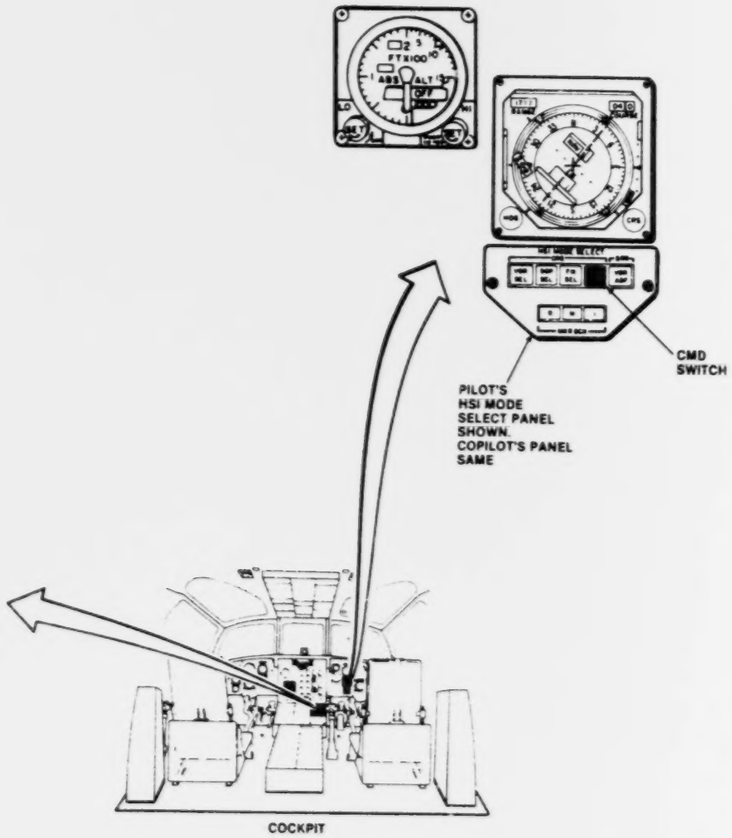

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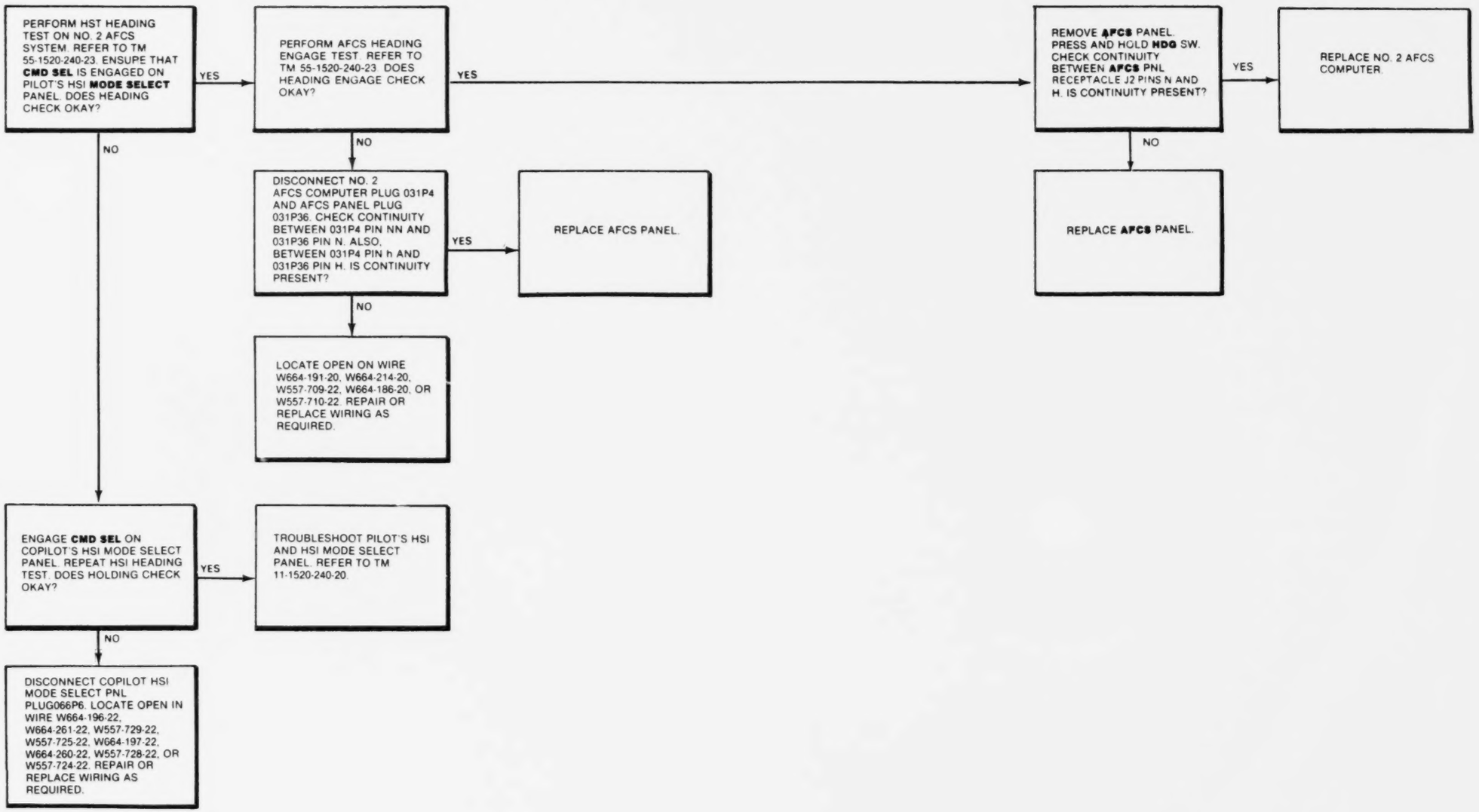
11-3.56 NO. 2 AFCS HEADING SELECT MODE RESPONSE WEAK OR INOPERATIVE (Continued)


PERFORM HST HEADING TEST ON NO. 2 AFCS SYSTEM. REFER TO TM 55-1520-240-23. ENSUPE THAT **CMD SEL** IS ENGAGED ON PILOT'S HSI **MODE SELECT** PANEL. DOES HEADING CHECK OKAY?
YES
PERFORM AFCS HEADING ENGAGE TEST. REFER TO TM 55-1520-240-23. DOES HEADING ENGAGE CHECK OKAY?
YES
REMOVE **AFCS** PANEL. PRESS AND HOLD **HDG** SW. CHECK CONTINUITY BETWEEN **AFCS** PNL RECEPTACLE J2 PINS N AND H. IS CONTINUITY PRESENT?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REPLACE **AFCS** PANEL.
NO
DISCONNECT NO. 2 AFCS COMPUTER PLUG 031P4 AND AFCS PANEL PLUG 031P36. CHECK CONTINUITY BETWEEN 031P4 PIN NN AND 031P36 PIN N. ALSO, BETWEEN 031P4 PIN h AND 031P36 PIN H. IS CONTINUITY PRESENT?
YES
REPLACE AFCS PANEL.
NO
LOCATE OPEN ON WIRE W664-191-20, W664-214-20, W557-709-22, W664-186-20, OR W557-710-22. REPAIR OR REPLACE WIRING AS REQUIRED.
ENGAGE **CMD SEL** ON COPILOT'S HSI MODE SELECT PANEL. REPEAT HSI HEADING TEST. DOES HOLDING CHECK OKAY?
YES
TROUBLESHOOT PILOT'S HSI AND HSI MODE SELECT PANEL. REFER TO TM 11-1520-240-20.
NO
DISCONNECT COPILOT HSI MODE SELECT PNL PLUG066P6. LOCATE OPEN IN WIRE W664-196-22, W664-261-22, W557-729-22, W557-725-22, W664-197-22, W664-260-22, W557-728-22, OR W557-724-22. REPAIR OR REPLACE WIRING AS REQUIRED.

END OF TASK

11-3.57 NO. 1 AFCS YAW STABILITY ERRATIC/OSCILLATORY

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

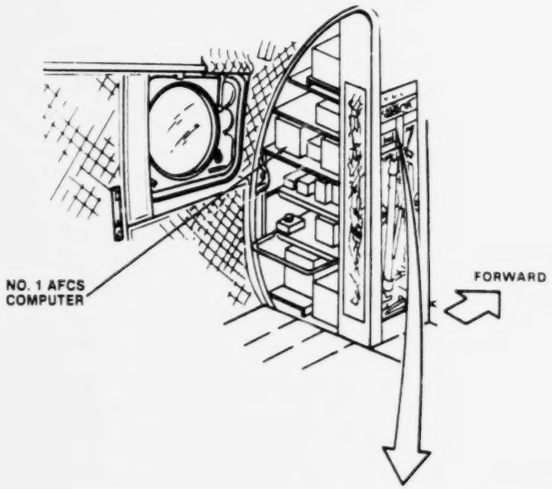
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

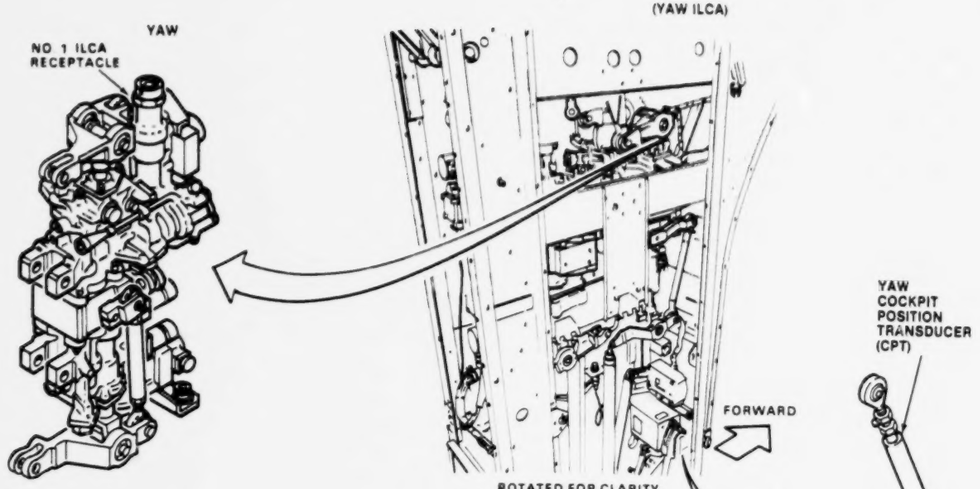
Materials:
None

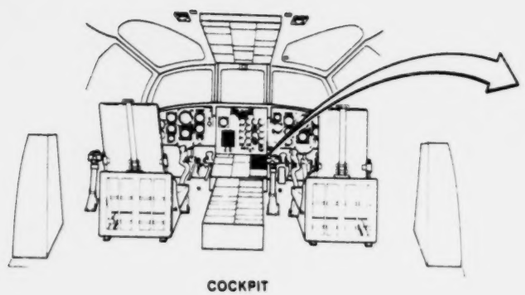
Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13:
AFCS Line Test Set 145G0009-1 Prepared for Use



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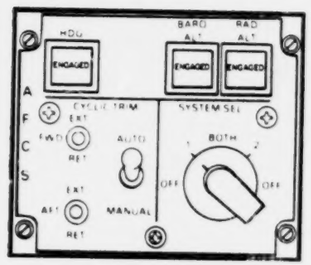

AFCS PANEL

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11-3.57 NO. 1 AFCS YAW STABILITY ERRATIC/OSCILLATORY (Continued)

PERFORM YAW ILCA AUTHORITY/PHASING TEST REFER TO TM 55-1520-240-23 DOES YAW ILCA AUTHORITY PHASING CHECK OKAY?

YES → PERFORM LEAK CHECK ON PNEUMATIC LINES FROM NO. 1 SYSTEM LEFT AND RIGHT SIDESLIP PORTS TO NO. 1 AFCS COMPUTER. REFER TO TASK 8-13. IS LEAK CHECK OK?

NO → REPAIR OR REPLACE LEAKING PNEUMATIC LINES

YES → REPLACE NO. 1 AFCS COMPUTER

NO

SET TEST SET **METER SOURCES** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS

SELECT SW POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	LESS THAN 1100
A-44	B-36	1500 TO 2200
A-47	B-46	LESS THAN 1100
A-41	B-46	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES → REMOVE ELECTRICAL POWER DISCONNECT PLUG 031P17 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER JUMPER PLUG 031P17 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES → CHECK FOR GROUND ON PLUG 031P17 PIN 7. IS GROUND PRESENT?

YES → REPLACE YAW ILCA

NO → LOCATE OPEN IN WIRE W664-GD-228A20N BETWEEN PLUG 031P17 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED

NO → LOCATE OPEN IN WIRE W664-17-20, W664-71-20, W664-24-20 OR W664-72-20 FOR PINS 1 AND 2 OR WIRE W664-22-20, W664-69-20, W664-20-20 OR W664-70-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED

NO

DISCONNECT PLUG 031P17 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P17 PINS FOR THAT POSITION AS FOLLOWS

SLECT SW POSITION		PLUG **031P17** PINS JUMPERED
A-SELECT SWITCH	B-SELECT SWITCH	
A-42	B-43	3 AND 4
A-44	B-36	8 AND 10
A-06	B-07	11 AND 12
A-47	B-46	13 AND 14
A-41	B-46	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES → REPLACE YAW ILCA.

NO → REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P8 PINS AND PLUG 031P17 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS

SELECT SW POSITION		PLUG 031P8 TO PIN	PLUG 031P17 PIN	WIRE NO
A-42	B-43	FF	3	W664-36-20
		GG	4	W664-32-20
A-44	B-36	HH	10	W664-34-20
		V	8	W664-33-20
A-47	B-46	BB	14	W664-31-20 OR W664-44-20
		KK	13	W664-35-20
A-41	B-46	LL	14	W664-30-20 OR W664-44-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PIN PAIR WHERE CONTINUITY IS NOT PRESENT

END OF TASK

11-3.58 NO. 2 AFCS YAW STABILITY ERRATIC/OSCILLATORY

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

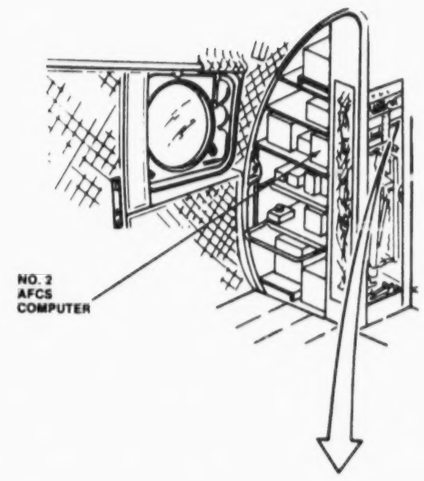
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

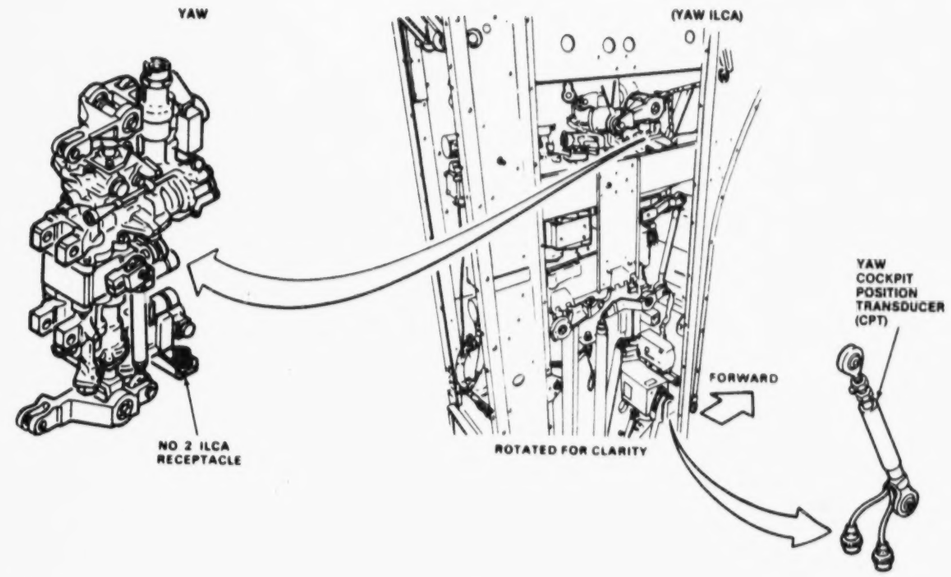
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use





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11-3.58 NO. 2 AFCS YAW STABILITY ERRATIC/OSCILLATORY (Continued)

PERFORM YAW ILCA AUTHORITY/PHASING TEST. REFER TO TM 55-1520-240-23. DOES YAW ILCA AUTHORITY PHASING CHECK OKAY?

YES

PERFORM LEAK CHECK ON PNEUMATIC LINES FROM NO. 2 SYSTEM LEFT AND RIGHT SIDESLIP PORTS TO NO. 2 AFCS COMPUTER. REFER TO TASK 8-13. IS LEAK CHECK OKAY?

NO

REPAIR OR REPLACE LEAKING PNEUMATIC LINES.

YES

REPLACE NO. 2 AFCS COMPUTER.

NO

SET TEST SET **METER SOURCE** SWITCH TO CONTINUITY. SET **AFCS** PANEL **SYSTEM SELECT** SWITCH TO **OFF**. TURN TEST SET **A-SELECT** AND **B-SELECT** SWITCHES AND CHECK RESISTANCE AS FOLLOWS:

SELECT SW POSITIONS		RESISTANCE (OHMS)
A-SELECT SWITCH	**B-SELECT** SWITCH	
A-42	B-43	LESS THAN 1100
A-44	B-36	1500 TO 2000
A-47	B-46	LESS THAN 1100
A-41	B-46	LESS THAN 1100

ARE ALL RESISTANCE VALUES PRESENT?

YES

REMOVE ELECTRICAL POWER. DISCONNECT PLUG 031P18 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO A-06 AND B-07. APPLY ELECTRICAL POWER. JUMPER PLUG 031P18 PINS 1 AND 2 AND THEN PINS 11 AND 12. DOES TEST SET METER INDICATE CONTINUITY FOR EACH SET OF JUMPERED PINS?

YES

CHECK FOR GROUND ON PLUG 031P18 PIN 7. IS GROUND PRESENT?

YES

REPLACE YAW ILCA.

NO

LOCATE OPEN IN WIRE W664-GD225B20N BETWEEN PLUG 031P18 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

LOCATE OPEN IN WIRE W664-86-20, W664-131-20, W664-91-20, OR W664-130-20 FOR PINS 1 AND 2 OR WIRE W664-88-20, W664-129-20, W664-87-20, OR W664-132-20 FOR PINS 11 AND 12. REPAIR OR REPLACE WIRE AS REQUIRED.

NO

DISCONNECT PLUG 031P18 FROM YAW ILCA. TURN **A-SELECT** AND **B-SELECT** SWITCHES TO POSITION THAT RESISTANCE VALUE WAS NOT PRESENT. CONNECT JUMPER WIRE BETWEEN PLUG 031P18 PINS FOR THAT POSITION AS FOLLOWS:

SELECT SW POSITION		PLUG **031P18** PINS JUMPERED
A-SELECT SWITCH	B-SELECT SWITCH	
A-42	B-43	3 AND 4
A-44	B-36	8 AND 10
A-06	B-07	11 AND 12
A-47	B-46	13 AND 14
B-41	B-46	13 AND 14

DOES TEST SET METER READ CONTINUITY?

YES

REPLACE YAW ILCA.

NO

REMOVE ELECTRICAL POWER. REMOVE JUMPER. DISCONNECT TEST SET. CHECK FOR CONTINUITY BETWEEN PLUG 031P10 PINS AND PLUG 031P18 PINS FOR SELECT SWITCH POSITION THAT FAILED AS FOLLOWS:

SELECT SW POSITION		PLUG 031P10 TO PIN	PLUG 031P18 PIN	WIRE NO
A-42	B-43	GG	3	W664-105-20
		FF	4	W664-101-20
A-44	B-36	W	10	W664-103-20
		HH	8	W664-102-20
A-47	B-46	KK	14	W664-104-20
		BB	13	W664-100-20 OR W664-116-20
A-41	B-46	LL	13	W664-99-20 OR W664-115-20

REPAIR OR REPLACE WIRING AS IDENTIFIED FOR ANY PLUG PAIR WHERE CONTINUITY IS NOT PRESENT.

END OF TASK

11-3.59 AFCS HEADING HOLD WEAK OR INOPERATIVE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

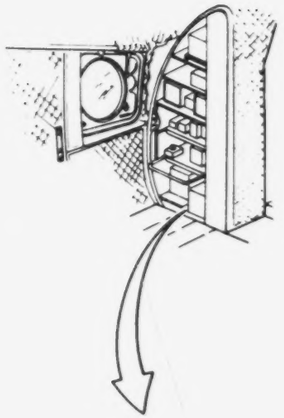
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

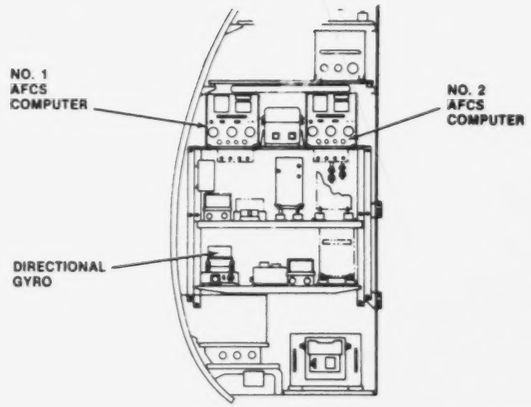
Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-249-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared For Use





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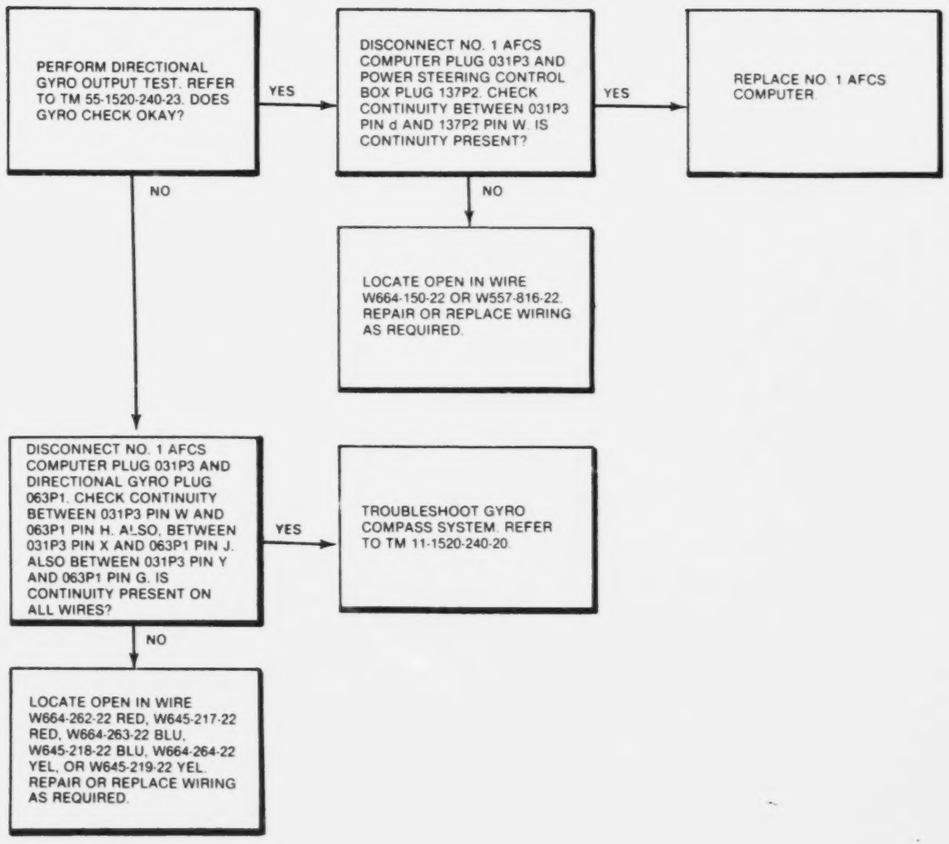
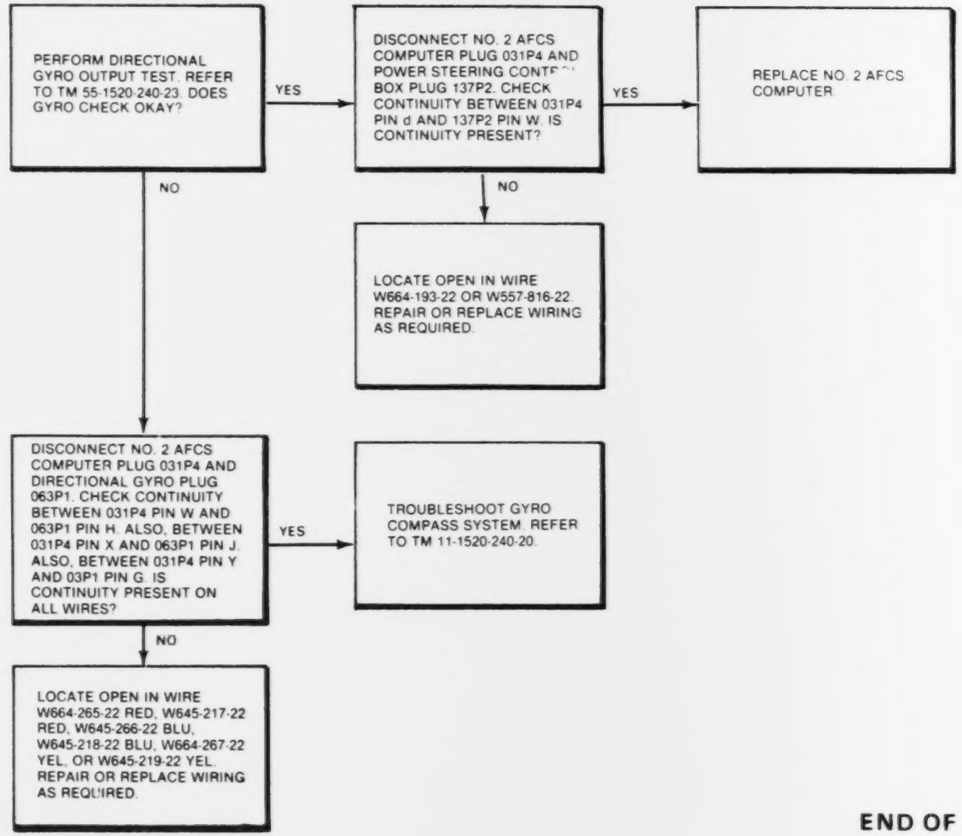
11-3.59 AFCS HEADING HOLD WEAK OR INOPERATIVE (Continued)

NO. 1 AFCS HEADING HOLD WEAK OR INOPERATIVE


PERFORM DIRECTIONAL GYRO OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES GYRO CHECK OKAY?
YES
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND POWER STEERING CONTROL BOX PLUG 137P2. CHECK CONTINUITY BETWEEN 031P3 PIN d AND 137P2 PIN W. IS CONTINUITY PRESENT?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
LOCATE OPEN IN WIRE W664-150-22 OR W557-816-22. REPAIR OR REPLACE WIRING AS REQUIRED.
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND DIRECTIONAL GYRO PLUG 063P1. CHECK CONTINUITY BETWEEN 031P3 PIN W AND 063P1 PIN H. ALSO, BETWEEN 031P3 PIN X AND 063P1 PIN J. ALSO BETWEEN 031P3 PIN Y AND 063P1 PIN G. IS CONTINUITY PRESENT ON ALL WIRES?
YES
TROUBLESHOOT GYRO COMPASS SYSTEM. REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-262-22 RED, W645-217-22 RED, W664-263-22 BLU, W645-218-22 BLU, W664-264-22 YEL, OR W645-219-22 YEL. REPAIR OR REPLACE WIRING AS REQUIRED.

NO. 2 AFCS HEADING HOLD WEAK OR INOPERATIVE


PERFORM DIRECTIONAL GYRO OUTPUT TEST. REFER TO TM 55-1520-240-23. DOES GYRO CHECK OKAY?
YES
DISCONNECT NO. 2 AFCS COMPUTER PLUG 031P4 AND POWER STEERING CONTROL BOX PLUG 137P2. CHECK CONTINUITY BETWEEN 031P4 PIN d AND 137P2 PIN W. IS CONTINUITY PRESENT?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
LOCATE OPEN IN WIRE W664-193-22 OR W557-816-22. REPAIR OR REPLACE WIRING AS REQUIRED.
NO
DISCONNECT NO. 2 AFCS COMPUTER PLUG 031P4 AND DIRECTIONAL GYRO PLUG 063P1. CHECK CONTINUITY BETWEEN 031P4 PIN W AND 063P1 PIN H. ALSO, BETWEEN 031P4 PIN X AND 063P1 PIN J. ALSO, BETWEEN 031P4 PIN Y AND 03P1 PIN G. IS CONTINUITY PRESENT ON ALL WIRES?
YES
TROUBLESHOOT GYRO COMPASS SYSTEM. REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-265-22 RED, W645-217-22 RED, W645-266-22 BLU, W645-218-22 BLU, W664-267-22 YEL, OR W645-219-22 YEL. REPAIR OR REPLACE WIRING AS REQUIRED.

END OF TASK

11-3.60 AFCS LATERAL STICK ONLY TURNS NOT COORDINATED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

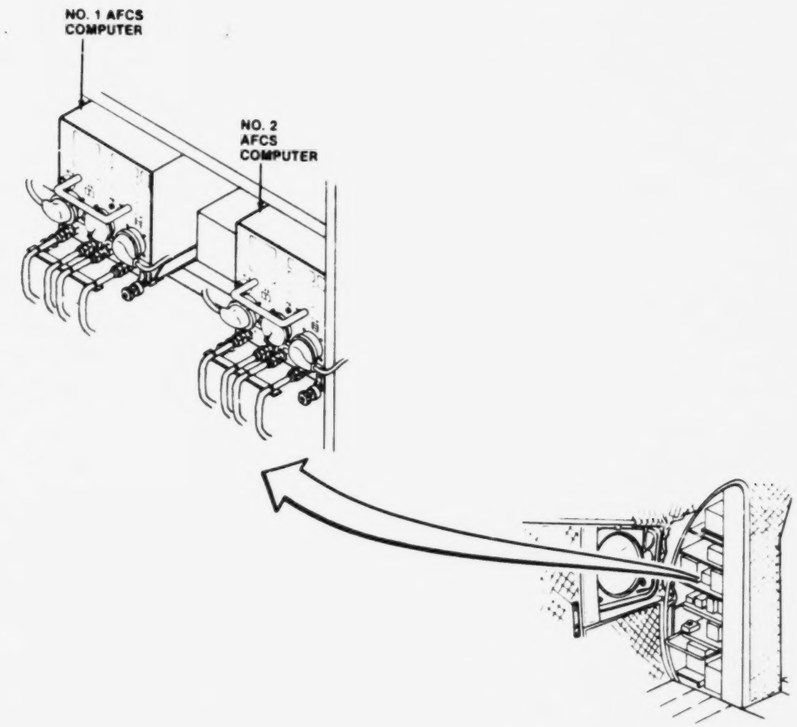
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equi;ment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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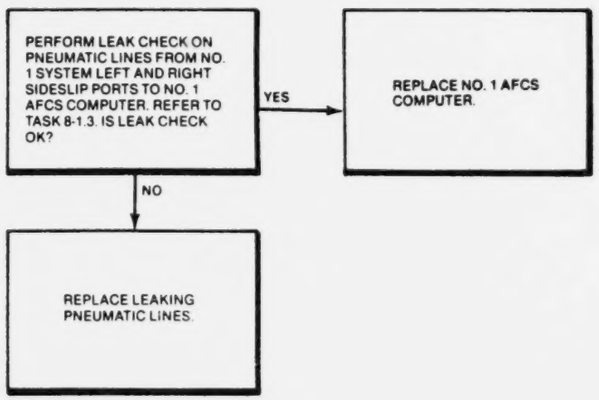
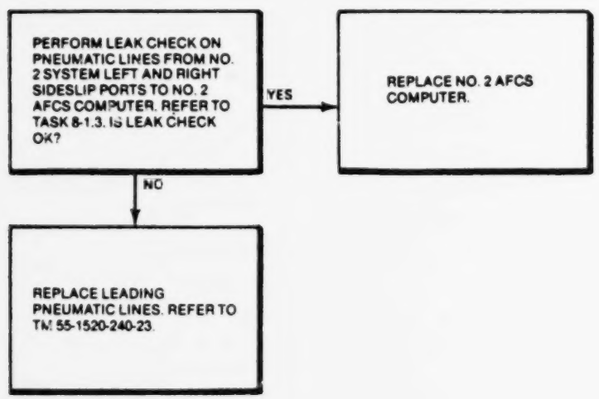
11-3.60 AFCS LATERAL STICK ONLY TURNS NOT COORDINATED (Continued)

NO. 1 AFCS LATERAL STICK ONLY TURNS NOT COORDINATED


PERFORM LEAK CHECK ON PNEUMATIC LINES FROM NO. 1 SYSTEM LEFT AND RIGHT SIDESLIP PORTS TO NO. 1 AFCS COMPUTER. REFER TO TASK 8-1.3. IS LEAK CHECK OK?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
REPLACE LEAKING PNEUMATIC LINES.

NO. 2 AFCS LATERAL STICK ONLY TURNS NOT COORDINATED


PERFORM LEAK CHECK ON PNEUMATIC LINES FROM NO. 2 SYSTEM LEFT AND RIGHT SIDESLIP PORTS TO NO. 2 AFCS COMPUTER. REFER TO TASK 8-1.3. IS LEAK CHECK OK?
YES
REPLACE NO. 2 AFCS COMPUTER.
NO
REPLACE LEADING PNEUMATIC LINES. REFER TO TM 55-1520-240-23.

END OF TASK

11-3.61 BAROMETRIC ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC (RADAR ALTITUDE HOLD OKAY)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

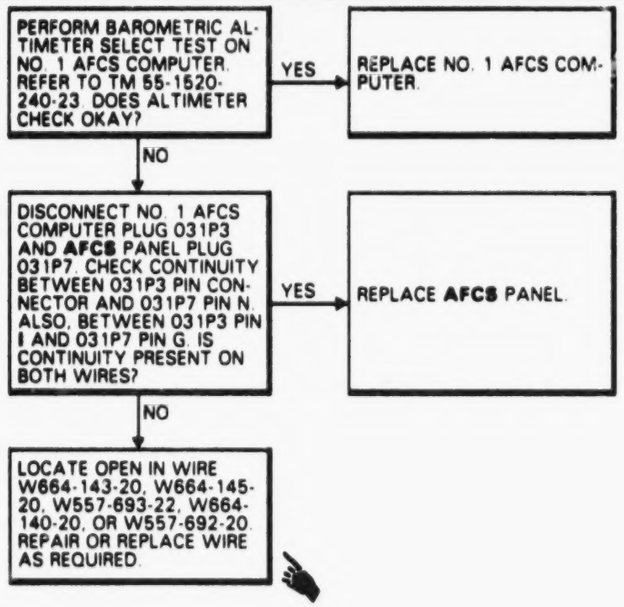
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

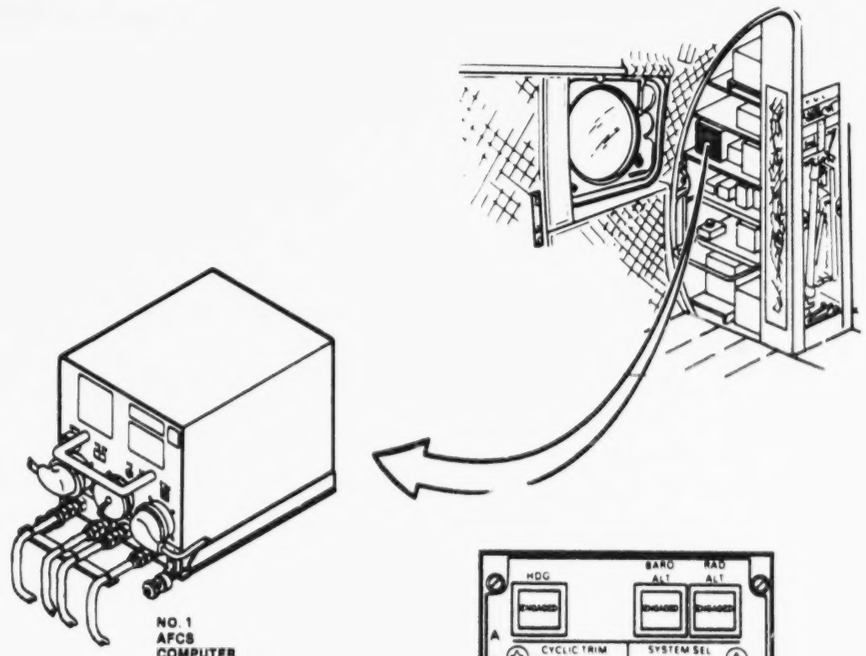
Materials:
None

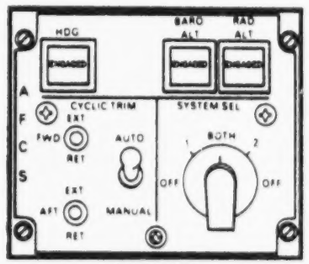
Personnel Required:
Avionic Mechanic (2)

References:
TM 55-1520-240-23
TM 55-4920-429-13

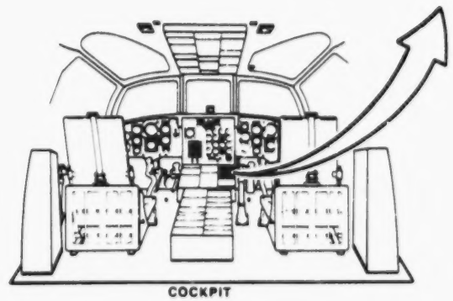
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1 Prepared for Use


PERFORM BAROMETRIC ALTIMETER SELECT TEST ON NO. 1 AFCS COMPUTER. REFER TO TM 55-1520-240-23. DOES ALTIMETER CHECK OKAY?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND AFCS PANEL PLUG 031P7. CHECK CONTINUITY BETWEEN 031P3 PIN CONNECTOR AND 031P7 PIN N. ALSO, BETWEEN 031P3 PIN I AND 031P7 PIN G. IS CONTINUITY PRESENT ON BOTH WIRES?
YES
REPLACE AFCS PANEL.
NO
LOCATE OPEN IN WIRE W664-143-20, W664-145-20, W557-693-22, W664-140-20, OR W557-692-20. REPAIR OR REPLACE WIRE AS REQUIRED.





AFCS PANEL



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END OF TASK

11-3.62 RADAR ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC (BAROMETRIC ALTITUDE HOLD OKAY)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

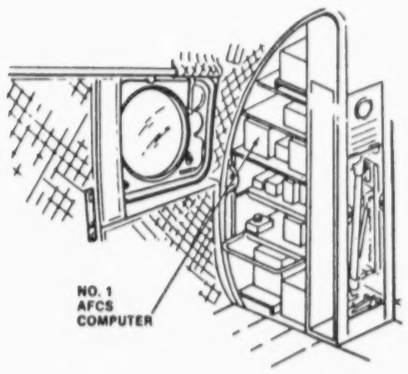
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use.



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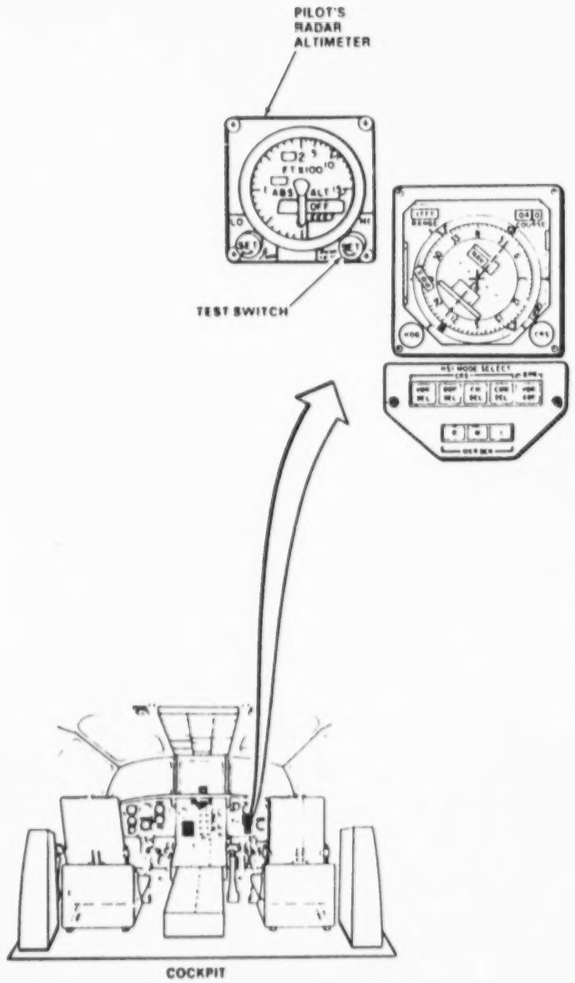

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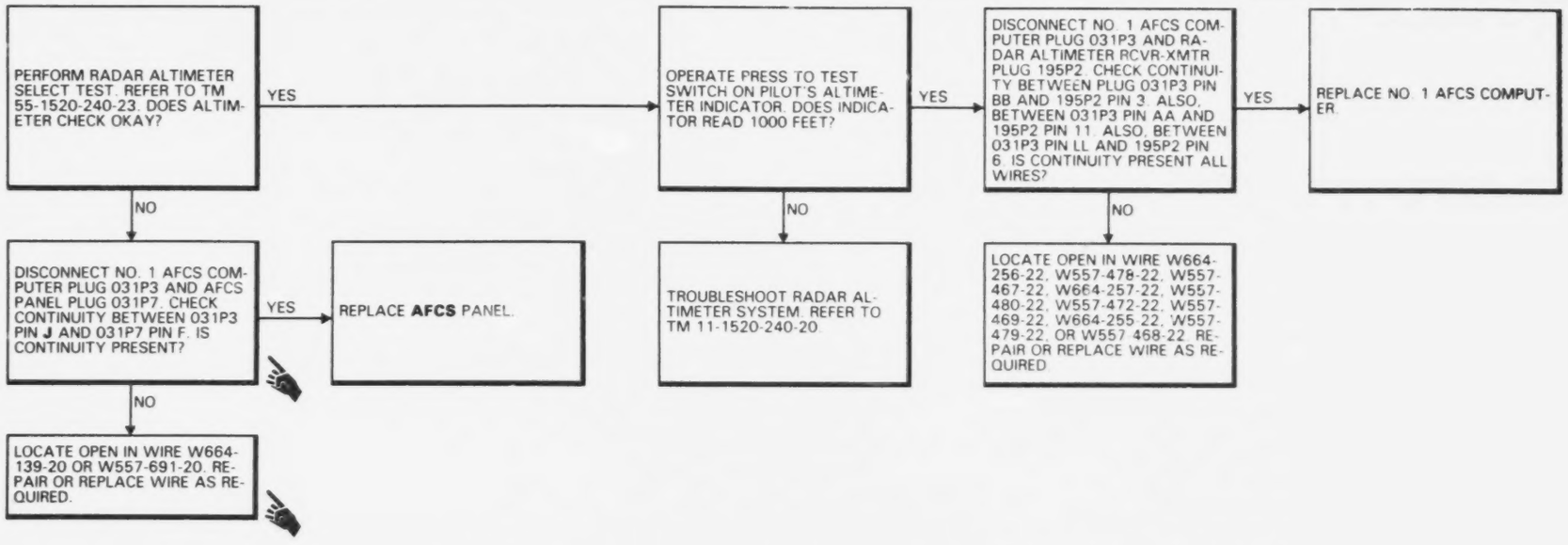
11-3.62 RADAR ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC (BAROMETRIC ALTITUDE HOLD OKAY) (Continued)


PERFORM RADAR ALTIMETER SELECT TEST. REFER TO TM 55-1520-240-23. DOES ALTIMETER CHECK OKAY?
YES
OPERATE PRESS TO TEST SWITCH ON PILOT'S ALTIMETER INDICATOR. DOES INDICATOR READ 1000 FEET?
YES
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND RADAR ALTIMETER RCVR-XMTR PLUG 195P2. CHECK CONTINUITY BETWEEN PLUG 031P3 PIN BB AND 195P2 PIN 3. ALSO, BETWEEN 031P3 PIN AA AND 195P2 PIN 11. ALSO, BETWEEN 031P3 PIN LL AND 195P2 PIN 6. IS CONTINUITY PRESENT ALL WIRES?
YES
REPLACE NO. 1 AFCS COMPUTER.
NO
DISCONNECT NO. 1 AFCS COMPUTER PLUG 031P3 AND AFCS PANEL PLUG 031P7. CHECK CONTINUITY BETWEEN 031P3 PIN J AND 031P7 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE AFCS PANEL.
NO
TROUBLESHOOT RADAR ALTIMETER SYSTEM. REFER TO TM 11-1520-240-20.
NO
LOCATE OPEN IN WIRE W664-256-22, W557-478-22, W557-467-22, W664-257-22, W557-480-22, W557-472-22, W557-469-22, W664-255-22, W557-479-22, OR W557-468-22. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W664-139-20 OR W557-691-20. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

11-3.63 BAROMETRIC AND RADAR ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

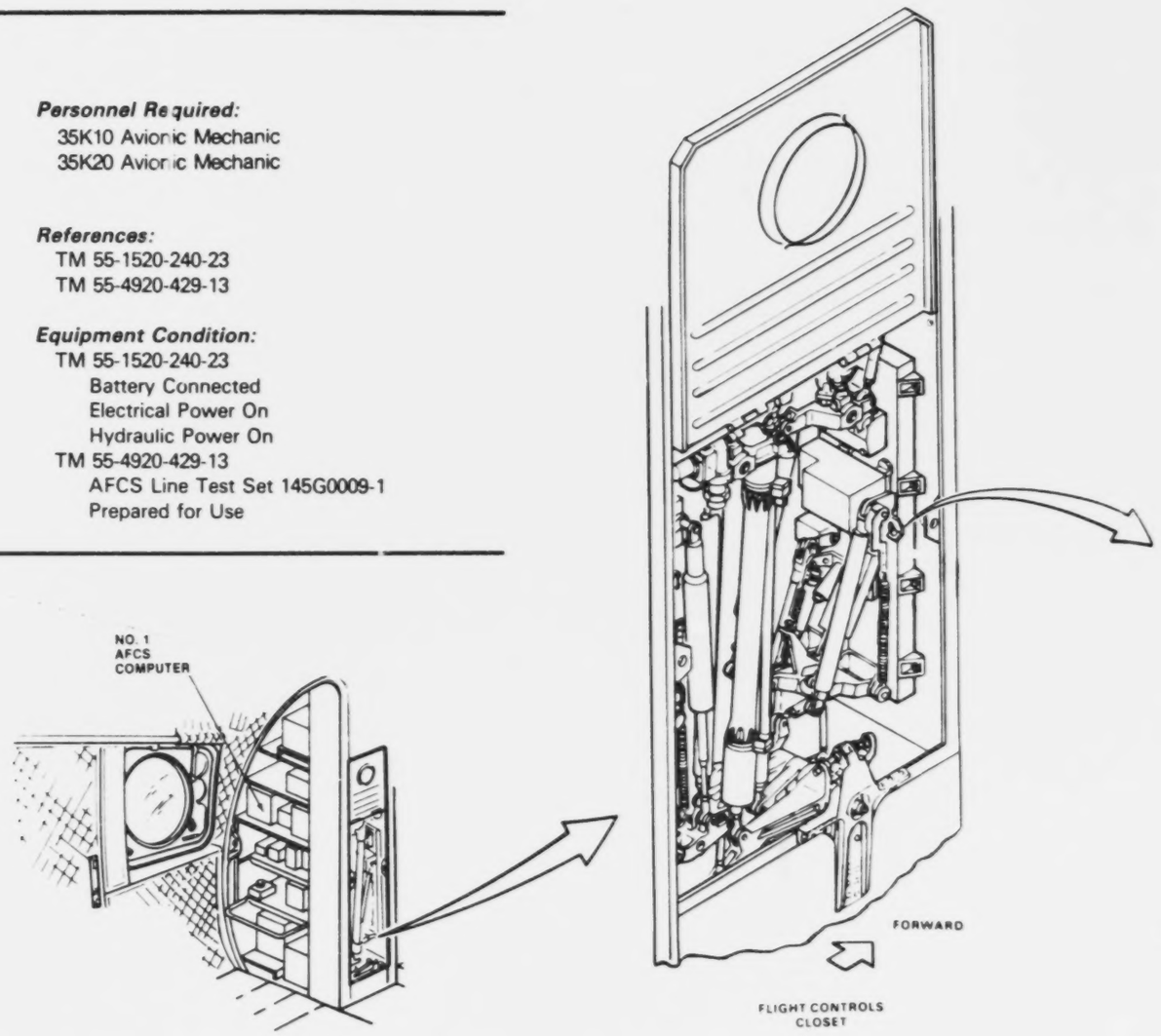
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
35K10 Avionic Mechanic
35K20 Avionic Mechanic

References:
TM 55-1520-240-23
TM 55-4920-429-13

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On
TM 55-4920-429-13
AFCS Line Test Set 145G0009-1
Prepared for Use



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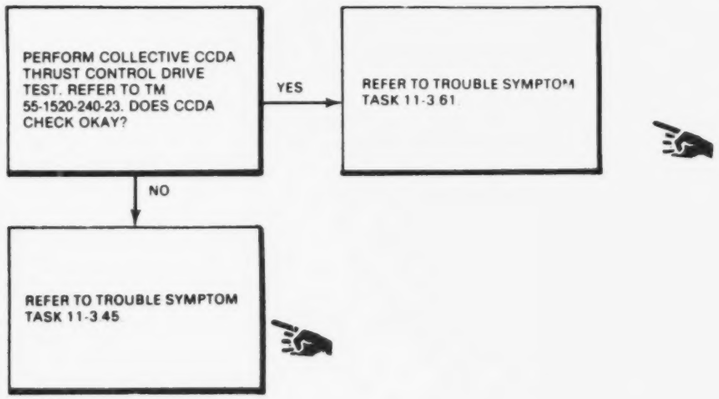
11-3.63 BAROMETRIC AND RADAR ALTITUDE HOLD INOPERATIVE OR RESPONSE ERRATIC (Continued)

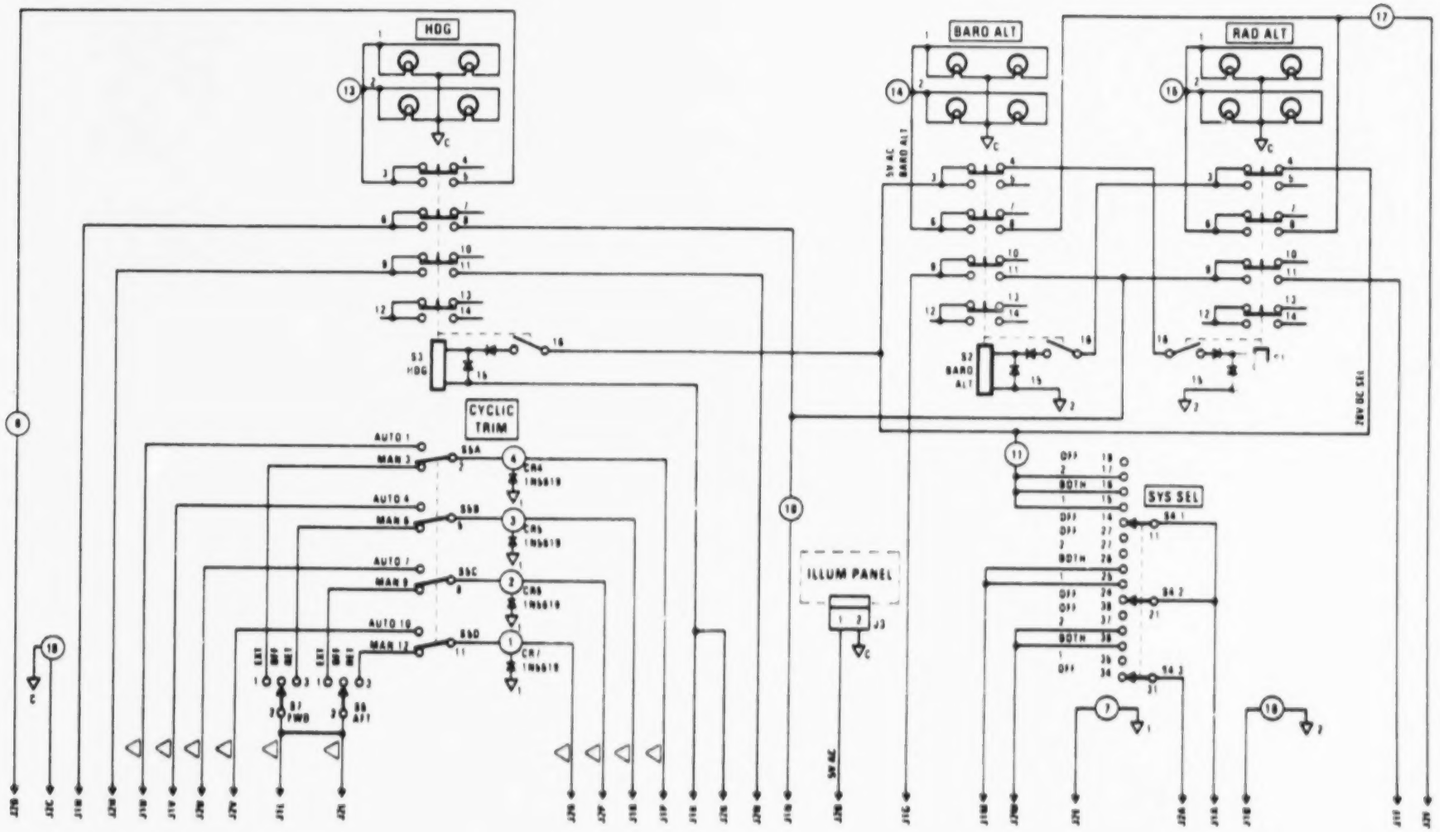

PERFORM COLLECTIVE CCDA THRUST CONTROL DRIVE TEST. REFER TO TM 55-1520-240-23. DOES CCDA CHECK OKAY?
YES
REFER TO TROUBLE SYMPTOM TASK 11-3.61
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.45

END OF TASK

11-4 AFCS CONTROL PANEL

11-4 AFCS CONTROL PANEL

11-4.1 AFCS CONTROL PANEL WIRING DIAGRAM



NOTE

1. 'INDICATES EQUIPMENT MARKING
2. INDICATES NUMBERED PAD ON PRINTED WIRING BOARD
3. ALL WIRE NO. 22 EXCEPT FOR △ WHICH IS NO. 20

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11-4.2 AFCS CONTROL PANEL VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

Materials:
None

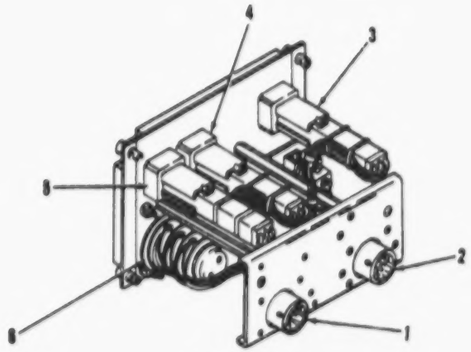
Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

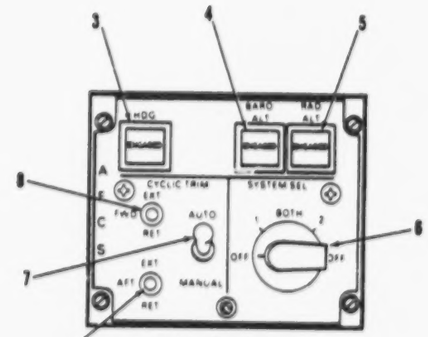
Equipment Condition:
AFCS Control Panel Disconnected From AFCS Bench Test Set
AFCS Control Panel Rear Cover Removed

TASK	RESULT
1. **Check pins in receptacles (1 and 2).**	If any pin is bent, straighten it. If any pin is broken, corroded, or burnt, replace it.
2. **Check switches (3 thru 9).**	If any switch is loose or damaged, tighten or replace it as required. If knob on switch (6) is loose, tighten or replace it.
3. **Check panel wires.**	If any wire termination is loose, tighten it. If any wire is damaged, replace it.

FOLLOW-ON MAINTENANCE:
None



AFCS CONTROL PANEL WITH REAR COVER REMOVED



AFCS CONTROL PANEL

11-4.3 AFCS CONTROL PANEL FAILS SYSTEMS SELECT TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

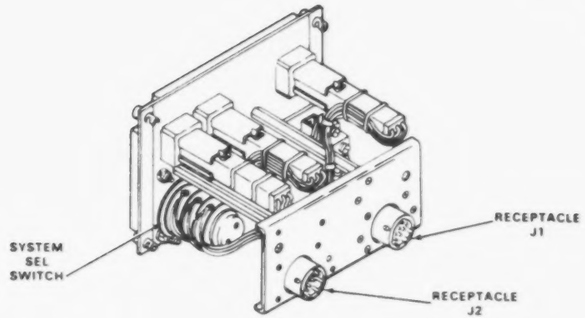
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

Materials:
None

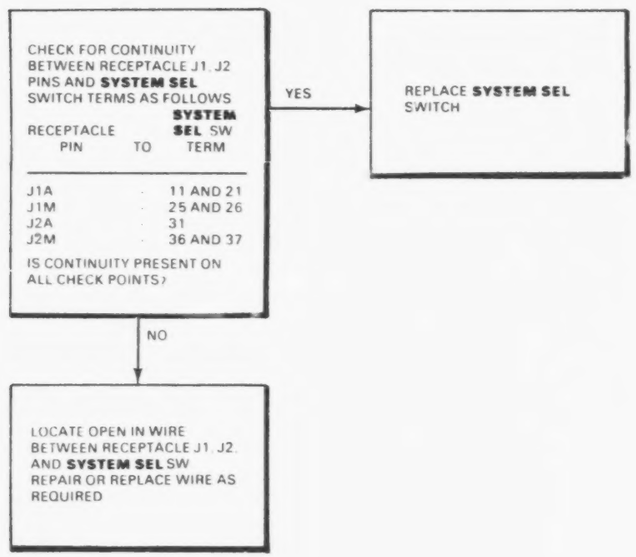
Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

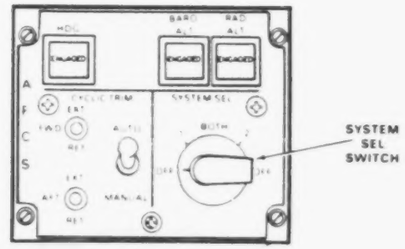
Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4.2)



AFCS CONTROL PANEL WITH REAR COVER REMOVED


CHECK FOR CONTINUITY BETWEEN RECEPTACLE J1, J2 PINS AND **SYSTEM SEL** SWITCH TERMS AS FOLLOWS
RECEPTACLE PIN TO **SYSTEM SEL** SW TERM
J1A - 11 AND 21
J1M - 25 AND 26
J2A - 31
J2M - 36 AND 37
IS CONTINUITY PRESENT ON ALL CHECK POINTS?
YES
REPLACE **SYSTEM SEL** SWITCH
NO
LOCATE OPEN IN WIRE BETWEEN RECEPTACLE J1, J2, AND **SYSTEM SEL** SW REPAIR OR REPLACE WIRE AS REQUIRED

45 x 54



AFCS CONTROL PANEL

0149 12438 SPA

END OF TASK

11-4.4 AFCS CONTROL PANEL FAILS RADAR ALTITUDE TESTS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

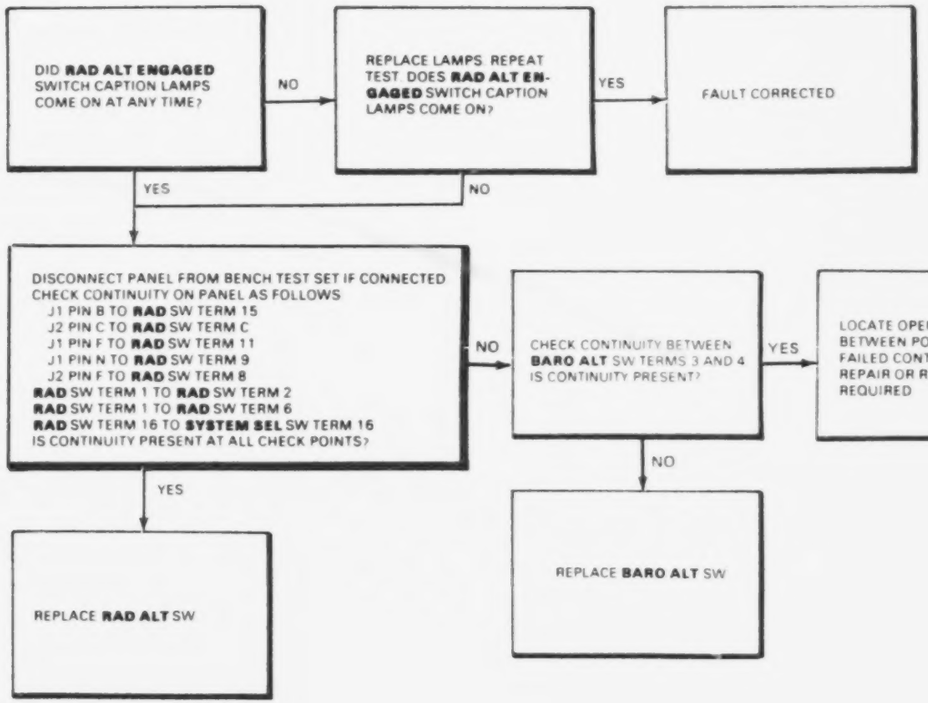
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

Materials:
None

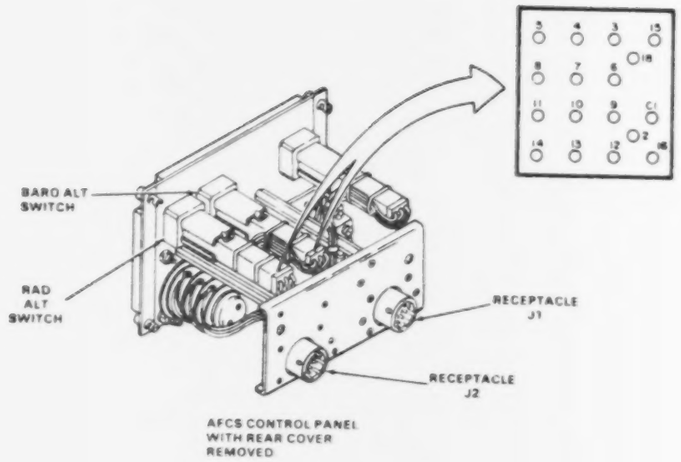
Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

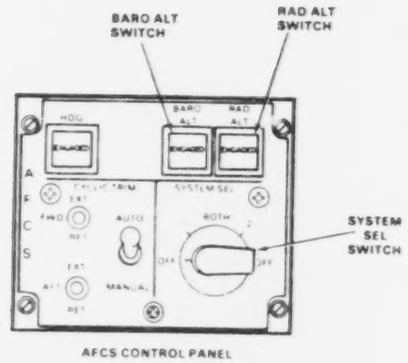
Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4.2)


DID **RAD ALT ENGAGED** SWITCH CAPTION LAMPS COME ON AT ANY TIME?
NO
REPLACE LAMPS. REPEAT TEST. DOES **RAD ALT ENGAGED** SWITCH CAPTION LAMPS COME ON?
YES
FAULT CORRECTED
YES
NO
DISCONNECT PANEL FROM BENCH TEST SET IF CONNECTED
CHECK CONTINUITY ON PANEL AS FOLLOWS
J1 PIN B TO **RAD** SW TERM 15
J2 PIN C TO **RAD** SW TERM C
J1 PIN F TO **RAD** SW TERM 11
J1 PIN N TO **RAD** SW TERM 9
J2 PIN F TO **RAD** SW TERM 8
RAD SW TERM 1 TO **RAD** SW TERM 2
RAD SW TERM 1 TO **RAD** SW TERM 6
RAD SW TERM 16 TO **SYSTEM SEL** SW TERM 16
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
NO
CHECK CONTINUITY BETWEEN **BARO ALT** SW TERMS 3 AND 4 IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE BETWEEN POINTS THAT FAILED CONTINUITY CHECK REPAIR OR REPLACE WIRE AS REQUIRED
YES
REPLACE **RAD ALT** SW
NO
REPLACE **BARO ALT** SW

45x54



AFCS CONTROL PANEL WITH REAR COVER REMOVED



AFCS CONTROL PANEL

D145-12439-3PA

END OF TASK

11-4.5 AFCS CONTROL PANEL FAILS BAROMETRIC ALTITUDE TESTS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

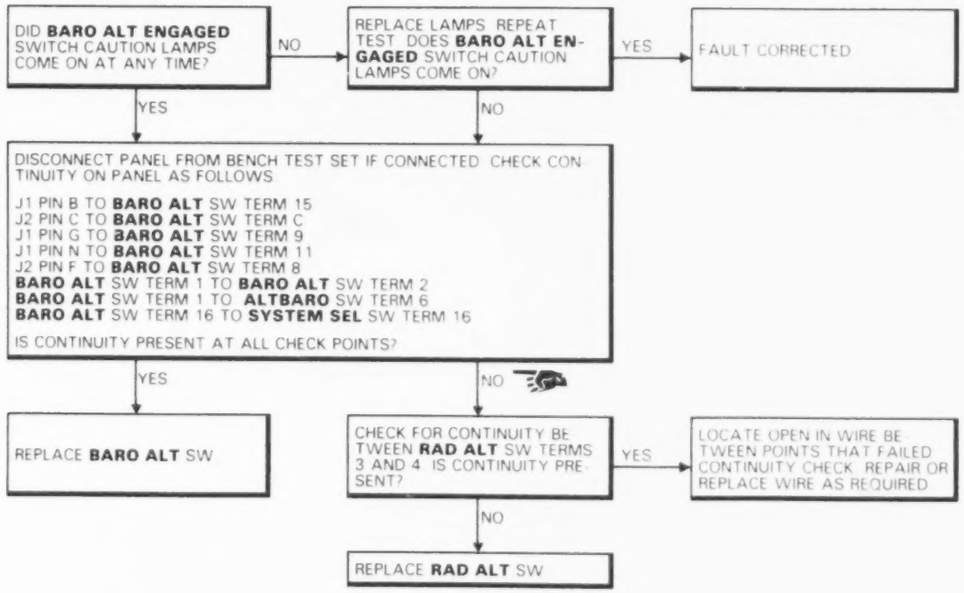
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

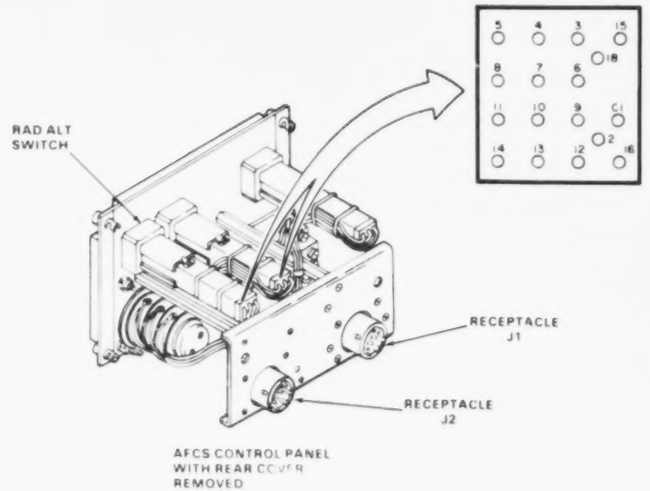
Materials:
None

Personnel Required:
Avionic Navigation and Flight Control Equipment Repairer

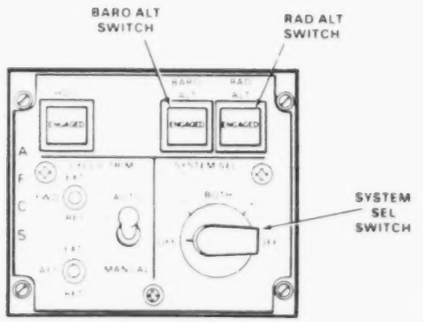
References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Control Panel Performed


DID **BARO ALT ENGAGED** SWITCH CAUTION LAMPS COME ON AT ANY TIME?
NO
REPLACE LAMPS. REPEAT TEST. DOES **BARO ALT ENGAGED** SWITCH CAUTION LAMPS COME ON?
YES
FAULT CORRECTED
YES
NO
DISCONNECT PANEL FROM BENCH TEST SET IF CONNECTED. CHECK CONTINUITY ON PANEL AS FOLLOWS
J1 PIN B TO **BARO ALT** SW TERM 15
J2 PIN C TO **BARO ALT** SW TERM C
J1 PIN G TO **BARO ALT** SW TERM 9
J1 PIN N TO **BARO ALT** SW TERM 11
J2 PIN F TO **BARO ALT** SW TERM 8
BARO ALT SW TERM 1 TO **BARO ALT** SW TERM 2
BARO ALT SW TERM 1 TO **ALTBARO** SW TERM 6
BARO ALT SW TERM 16 TO **SYSTEM SEL** SW TERM 16
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
YES
NO
REPLACE **BARO ALT** SW
CHECK FOR CONTINUITY BETWEEN **RAD ALT** SW TERMS 3 AND 4. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE BETWEEN POINTS THAT FAILED CONTINUITY CHECK. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE **RAD ALT** SW



AFCS CONTROL PANEL WITH REAR COVER REMOVED



AFCS CONTROL PANEL

45 x 54

D145 12440 SPA

END OF TASK

11-4.6 AFCS CONTROL PANEL FAILS HEADING TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

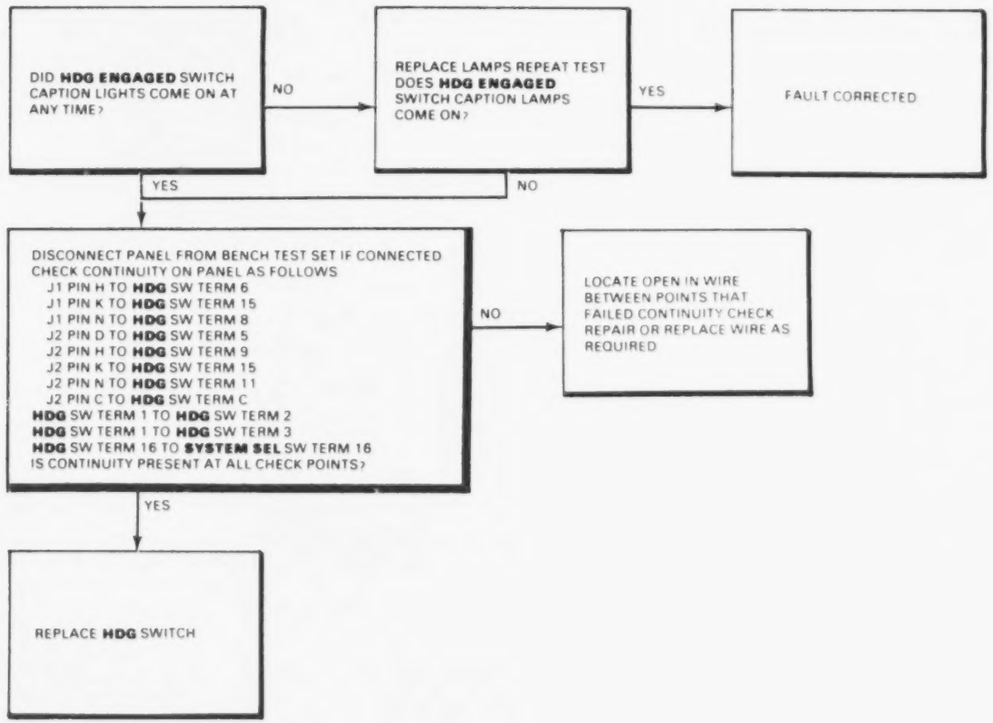
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

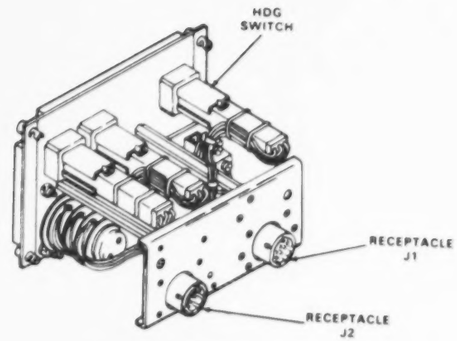
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

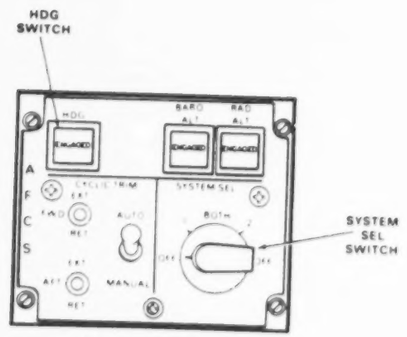
References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4 2)


DID **HDG ENGAGED** SWITCH CAPTION LIGHTS COME ON AT ANY TIME?
NO
REPLACE LAMPS REPEAT TEST DOES **HDG ENGAGED** SWITCH CAPTION LAMPS COME ON?
YES
FAULT CORRECTED
YES
NO
DISCONNECT PANEL FROM BENCH TEST SET IF CONNECTED CHECK CONTINUITY ON PANEL AS FOLLOWS
J1 PIN H TO **HDG** SW TERM 6
J1 PIN K TO **HDG** SW TERM 15
J1 PIN N TO **HDG** SW TERM 8
J2 PIN D TO **HDG** SW TERM 5
J2 PIN H TO **HDG** SW TERM 9
J2 PIN K TO **HDG** SW TERM 15
J2 PIN N TO **HDG** SW TERM 11
J2 PIN C TO **HDG** SW TERM C
HDG SW TERM 1 TO **HDG** SW TERM 2
HDG SW TERM 1 TO **HDG** SW TERM 3
HDG SW TERM 16 TO **SYSTEM SEL** SW TERM 16
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
NO
LOCATE OPEN IN WIRE BETWEEN POINTS THAT FAILED CONTINUITY CHECK REPAIR OR REPLACE WIRE AS REQUIRED
YES
REPLACE **HDG** SWITCH



AFCS CONTROL PANEL WITH REAR COVER REMOVED



AFCS CONTROL PANEL

D145 12441 SPA

END OF TASK

11-4.7 AFCS CONTROL PANEL FAILS CYCLIC TRIM — MANUAL TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

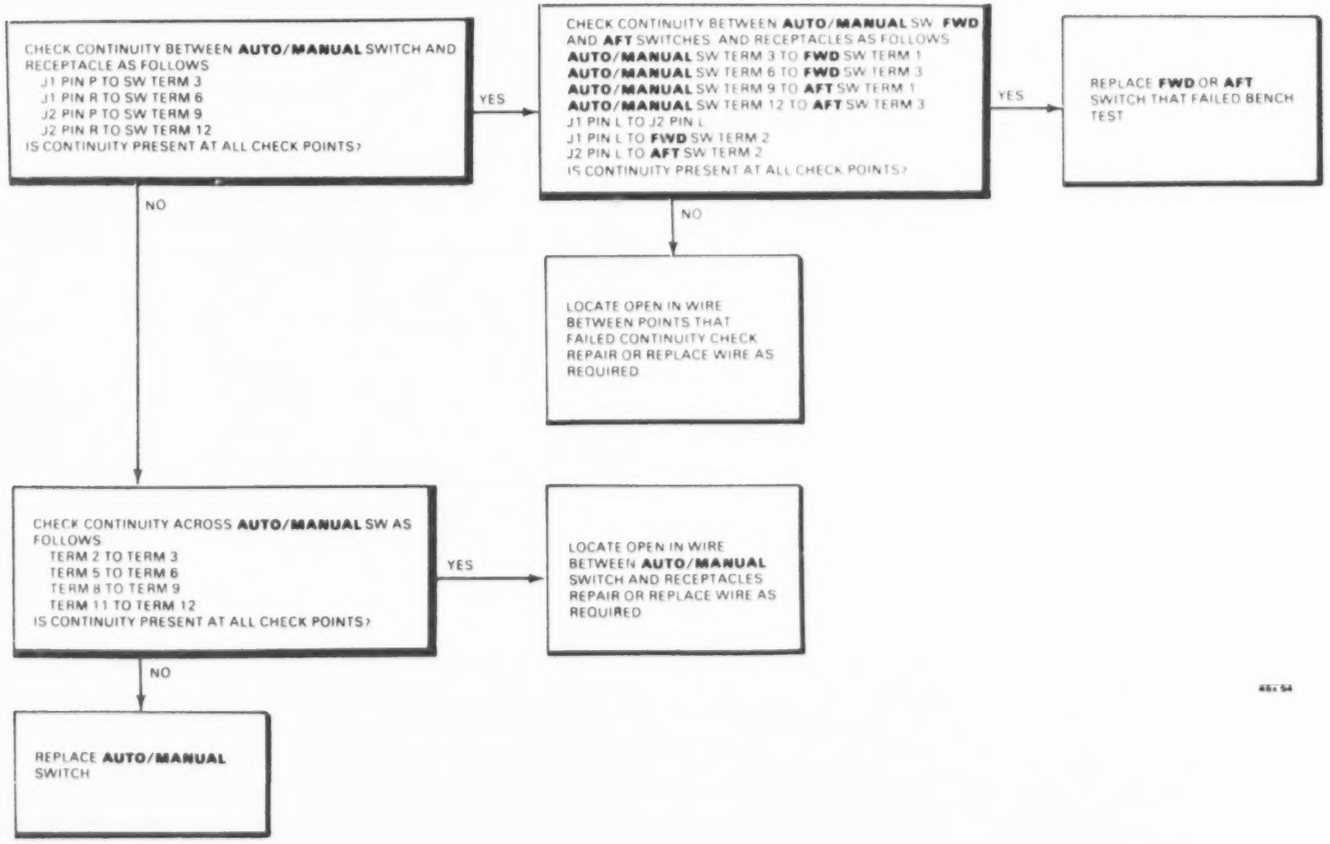
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

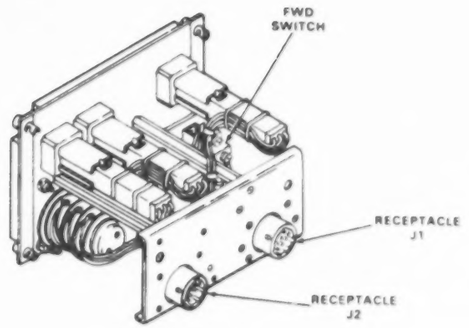
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

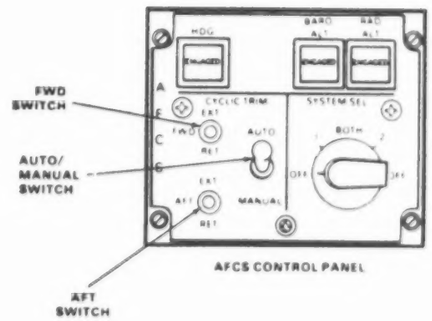
References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4.2)


CHECK CONTINUITY BETWEEN **AUTO/MANUAL** SWITCH AND RECEPTACLE AS FOLLOWS
J1 PIN P TO SW TERM 3
J1 PIN R TO SW TERM 6
J2 PIN P TO SW TERM 9
J2 PIN R TO SW TERM 12
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
YES
CHECK CONTINUITY BETWEEN **AUTO/MANUAL** SW **FWD** AND **AFT** SWITCHES AND RECEPTACLES AS FOLLOWS
AUTO/MANUAL SW TERM 3 TO **FWD** SW TERM 1
AUTO/MANUAL SW TERM 6 TO **FWD** SW TERM 3
AUTO/MANUAL SW TERM 9 TO **AFT** SW TERM 1
AUTO/MANUAL SW TERM 12 TO **AFT** SW TERM 3
J1 PIN L TO J2 PIN L
J1 PIN L TO **FWD** SW TERM 2
J2 PIN L TO **AFT** SW TERM 2
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
YES
REPLACE **FWD** OR **AFT** SWITCH THAT FAILED BENCH TEST
NO
LOCATE OPEN IN WIRE BETWEEN POINTS THAT FAILED CONTINUITY CHECK REPAIR OR REPLACE WIRE AS REQUIRED
NO
CHECK CONTINUITY ACROSS **AUTO/MANUAL** SW AS FOLLOWS
TERM 2 TO TERM 3
TERM 5 TO TERM 6
TERM 8 TO TERM 9
TERM 11 TO TERM 12
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
YES
LOCATE OPEN IN WIRE BETWEEN **AUTO/MANUAL** SWITCH AND RECEPTACLES REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE **AUTO/MANUAL** SWITCH



AFCS CONTROL PANEL WITH REAR COVER REMOVED



AFCS CONTROL PANEL

END OF TASK

11-4.8 AFCS CONTROL PANEL FAILS CYCLIC TRIM — AUTOMATIC TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

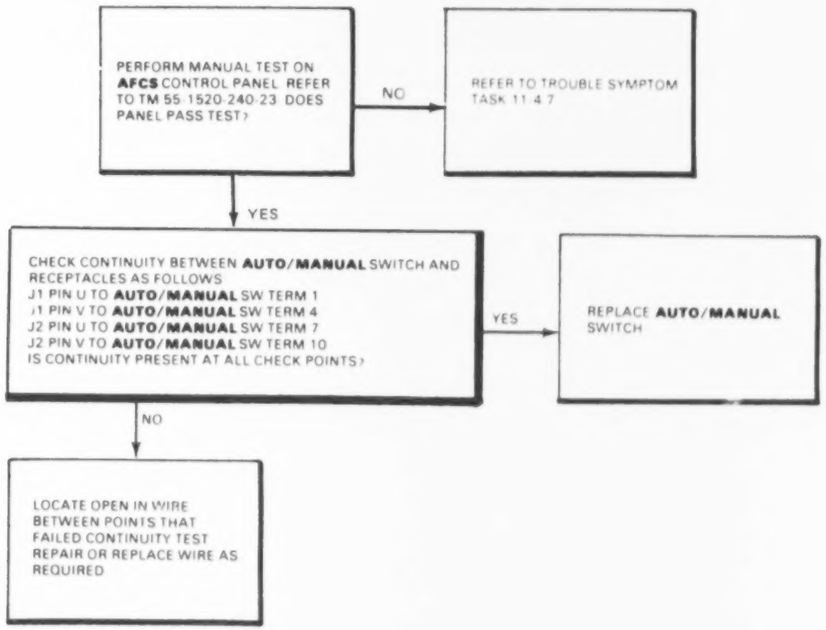
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

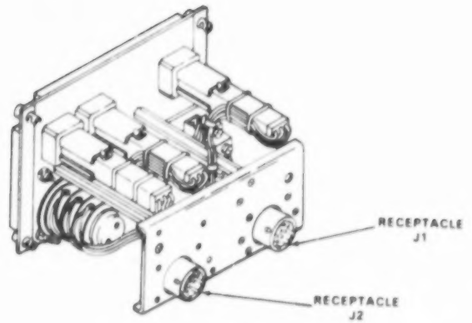
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

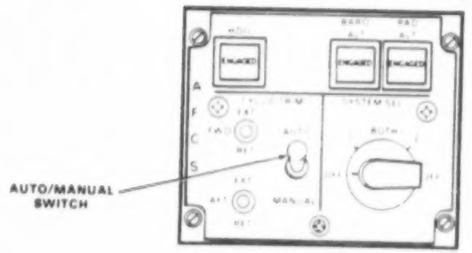
References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4.2)


PERFORM MANUAL TEST ON AFCS CONTROL PANEL REFER TO TM 55-1520-240-23 DOES PANEL PASS TEST?
NO
REFER TO TROUBLE SYMPTOM TASK 11-4.7
YES
CHECK CONTINUITY BETWEEN AUTO/MANUAL SWITCH AND RECEPTACLES AS FOLLOWS
J1 PIN U TO AUTO/MANUAL SW TERM 1
J1 PIN V TO AUTO/MANUAL SW TERM 4
J2 PIN U TO AUTO/MANUAL SW TERM 7
J2 PIN V TO AUTO/MANUAL SW TERM 10
IS CONTINUITY PRESENT AT ALL CHECK POINTS?
YES
REPLACE AUTO/MANUAL SWITCH
NO
LOCATE OPEN IN WIRE BETWEEN POINTS THAT FAILED CONTINUITY TEST REPAIR OR REPLACE WIRE AS REQUIRED



AFCS CONTROL PANEL WITH REAR COVER REMOVED



AFCS CONTROL PANEL

11-4.9 AFCS CONTROL PANEL FAILS PANEL ILLUMINATION TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

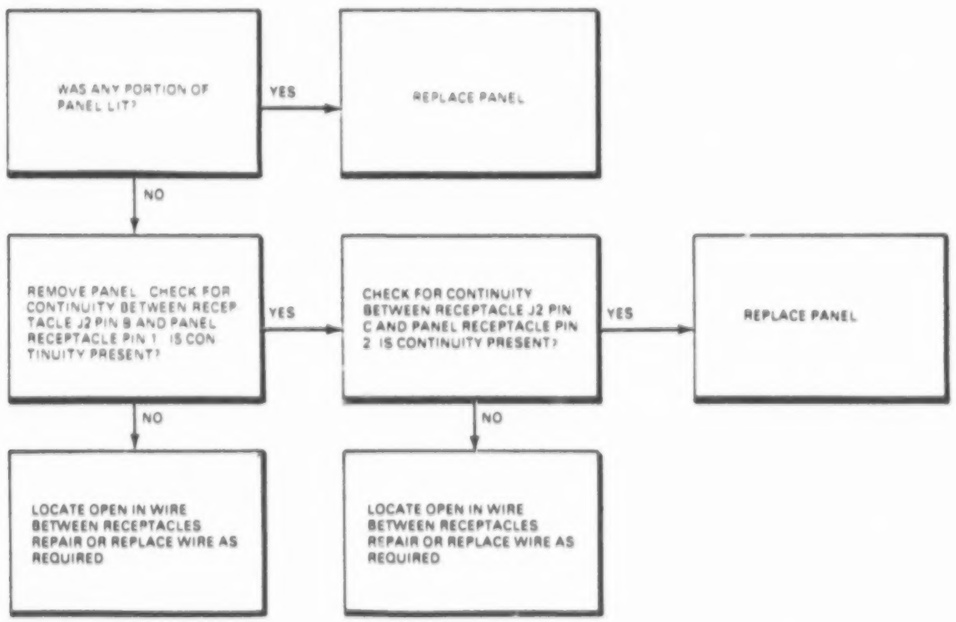
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

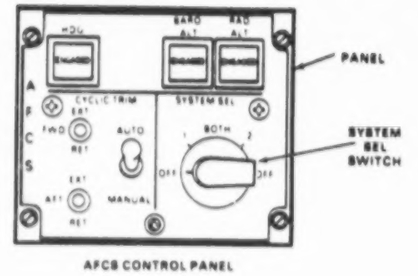
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

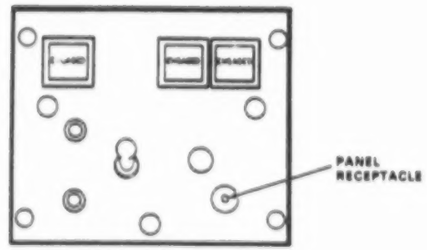
References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4.2)


WAS ANY PORTION OF PANEL LIT?
YES
REPLACE PANEL
NO
REMOVE PANEL. CHECK FOR CONTINUITY BETWEEN RECEPTACLE J2 PIN B AND PANEL RECEPTACLE PIN 1. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN RECEPTACLE J2 PIN C AND PANEL RECEPTACLE PIN 2. IS CONTINUITY PRESENT?
YES
REPLACE PANEL
NO
LOCATE OPEN IN WIRE BETWEEN RECEPTACLES REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE BETWEEN RECEPTACLES REPAIR OR REPLACE WIRE AS REQUIRED



AFCS CONTROL PANEL



AFCS CONTROL PANEL

END OF TASK

11-4.10 AFCS CONTROL PANEL FAILS DIODE TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

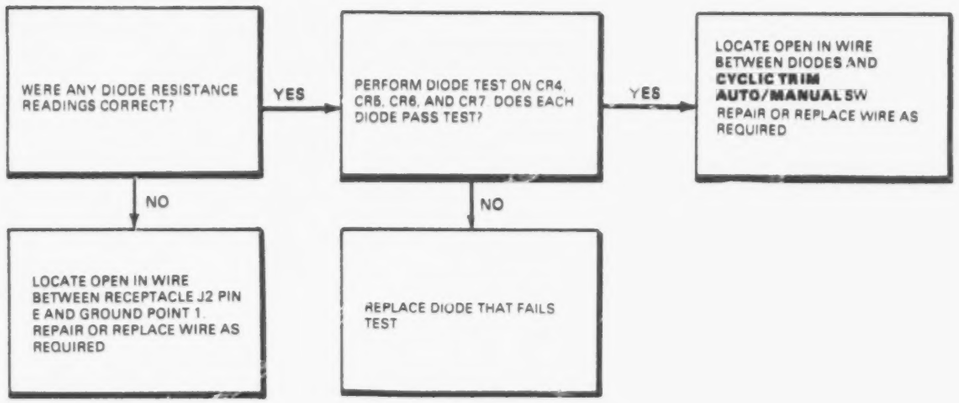
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

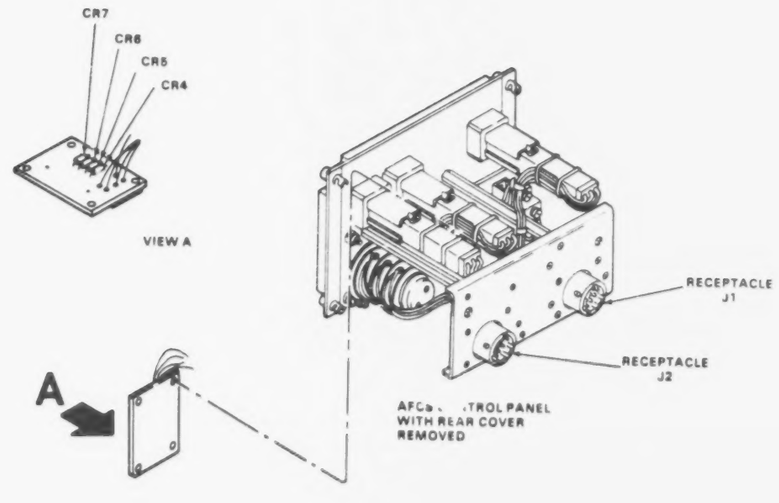
Materials:
None

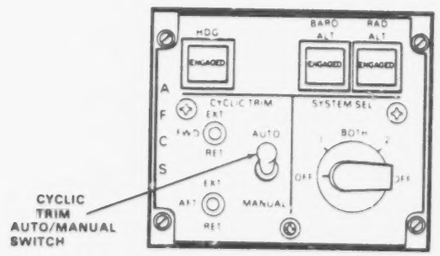
Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Control Panel Performed (Task 11-4.2)


WERE ANY DIODE RESISTANCE READINGS CORRECT?
YES
PERFORM DIODE TEST ON CR4, CR5, CR6, AND CR7. DOES EACH DIODE PASS TEST?
YES
LOCATE OPEN IN WIRE BETWEEN DIODES AND CYCLIC TRIM AUTO/MANUAL SW REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE BETWEEN RECEPTACLE J2 PIN E AND GROUND POINT 1. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE DIODE THAT FAILS TEST



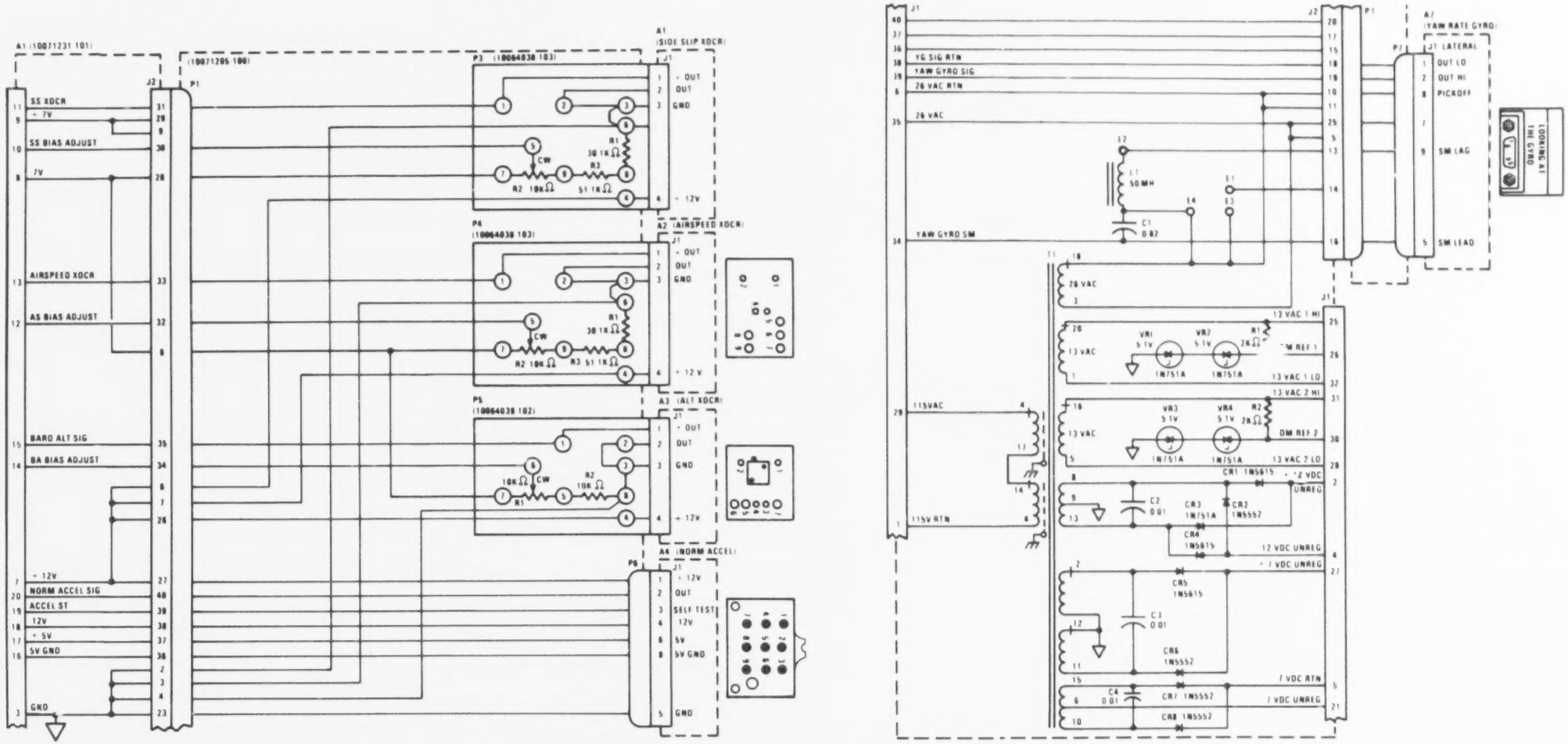


AFCS CONTROL PANEL

D148.12444 SPA

END OF TASK

11-5 AFCS COMPUTER



AFCS COMPUTER BASE WIRING DIAGRAM

90x54

D145-12433-SPA

11-5.2 AFCS COMPUTER VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

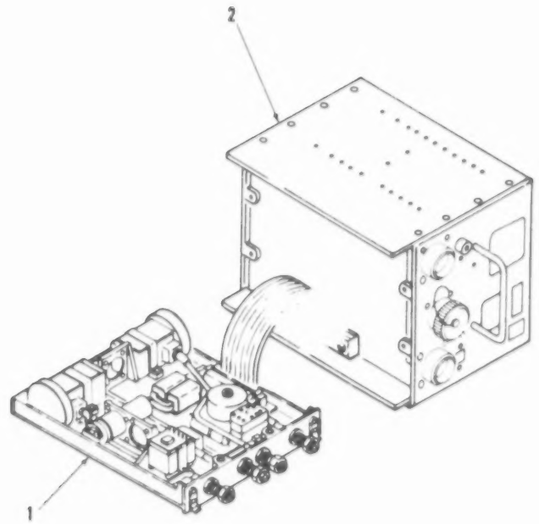
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
AFCS Computer Base Separated From AFCS Computer Box

TASK	RESULT
1. **Check components on base (1).**	If any component is loose or damaged, tighten or replace it as required. If wiring to any component is damaged, replace it.
2. **Check wiring on bottom of box (2).**	If any wire is broken, forward computer to depot for disposition.



FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:

AFCS computer base connected to box.

Test AFCS computer.

11-5.3 AFCS COMPUTER FAILS TEST 1 (CONTINUITY TEST)

FAULT ISOLATION PROCEDURE
INITIAL SETUP

Applicable Configurations:
All

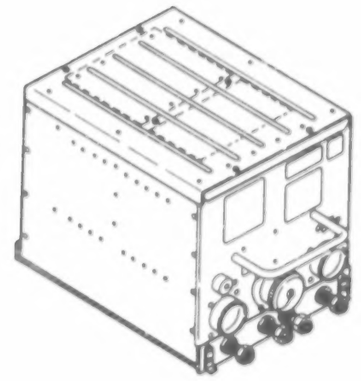
Tools:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
None

RETURN AFCS COMPUTER TO DEPOT FOR DISPOSITION



AFCS COMPUTER

48 x 54

D148-12447-8PA

END OF TASK

11-5.4 AFCS COMPUTER FAILS TEST 2 (POWER SUPPLY TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

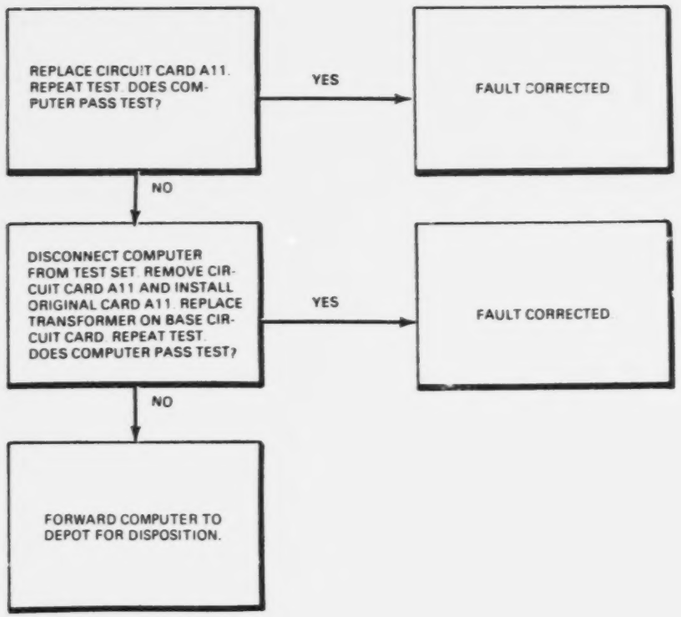
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

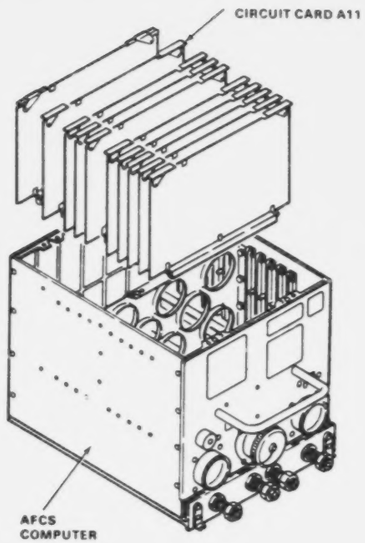
Materials:
None

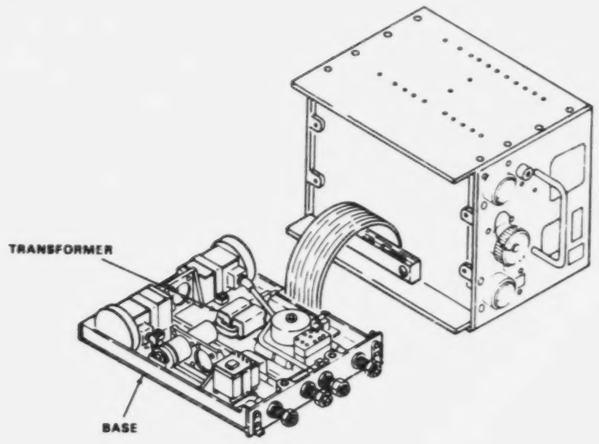
Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Removed


REPLACE CIRCUIT CARD A11. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED
NO
DISCONNECT COMPUTER FROM TEST SET. REMOVE CIRCUIT CARD A11 AND INSTALL ORIGINAL CARD A11. REPLACE TRANSFORMER ON BASE CIRCUIT CARD. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED
NO
FORWARD COMPUTER TO DEPOT FOR DISPOSITION.





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END OF TASK

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11-5.5 AFCS COMPUTER FAILS TEST 3 (LOGIC TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

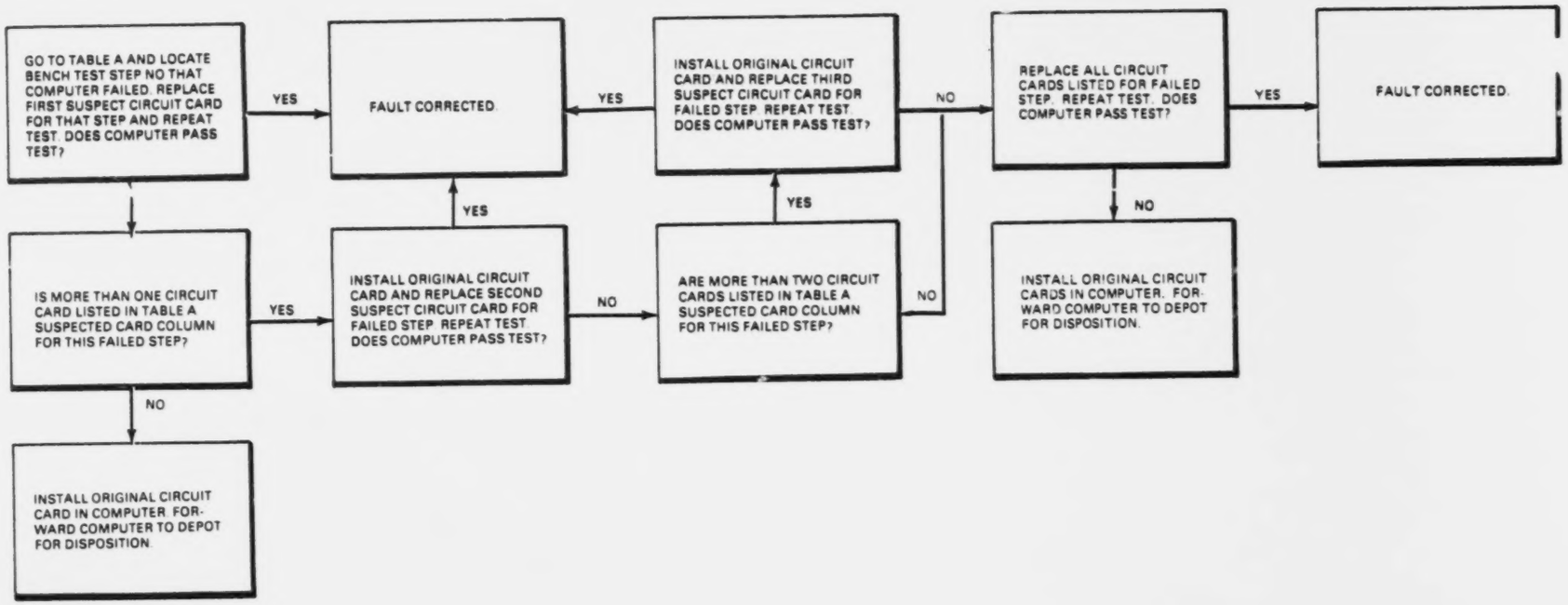
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23
AFCS Computer Cover Removed

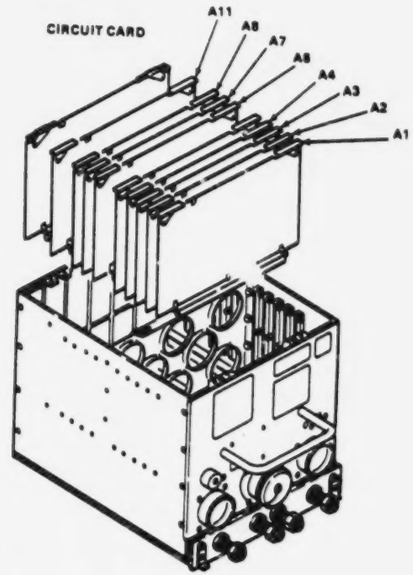

GO TO TABLE A AND LOCATE BENCH TEST STEP NO THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE A SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
IS MORE THAN ONE CIRCUIT CARD LISTED IN TABLE A SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.

GO TO NEXT PAGE

11-5.5 AFCS COMPUTER FAILS TEST 3 (LOGIC TEST) (Continued)

TABLE A. LOGIC TEST FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
31-34	A11, A1
35, 36	A1, A11, A8
37, 38	A1
39-42	A1
43-47	A1, A11
48-61	A1
62-64	A1, A3,A6
65	A1
66, 67	A1, A3, A6
68, 69	A1
70-72	A1, A7, A2
73	A1, A2
74	A1, A2, A7
75-79	A1
80-82	A1, A4, A7
83	A1, A4
84	A1, A4, A7
85-92	A1
93,94	A1, A2
95-101	A11, A1, A7
102-103	A1, A7
104-107	A1



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END OF TASK

11-5.6 AFCS COMPUTER FAILS TEST 4 (PITCH AXIS TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

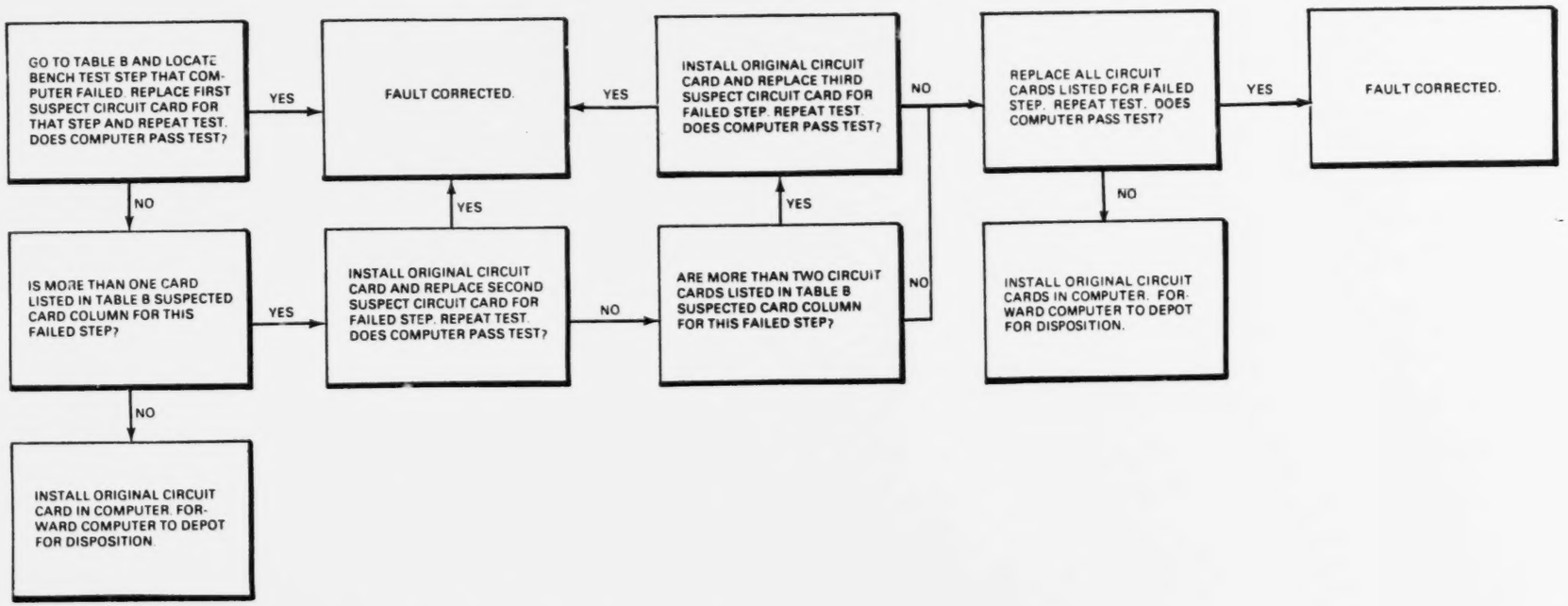
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

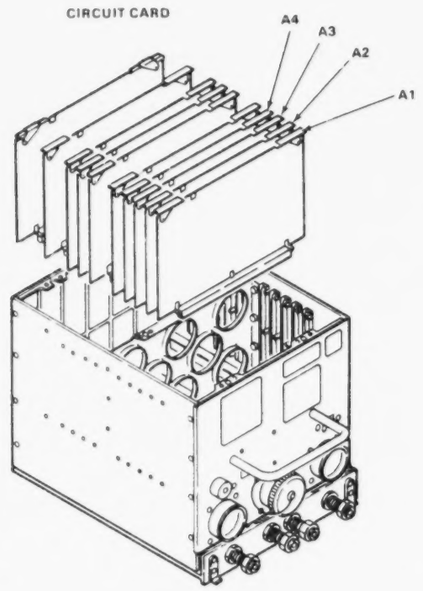
Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Removed


GO TO TABLE B AND LOCATE BENCH TEST STEP THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
IS MORE THAN ONE CARD LISTED IN TABLE B SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE B SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.

GO TO NEXT PAGE

TABLE B. PITCH AXIS TEST
FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
108-136	A3
144	A3, A2, A4
145, 146	A3, A1
147-156	A3
157-166	A3, A1



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END OF TASK

11-5.7 AFCS COMPUTER FAILS TEST 5 (ROLL AXIS TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

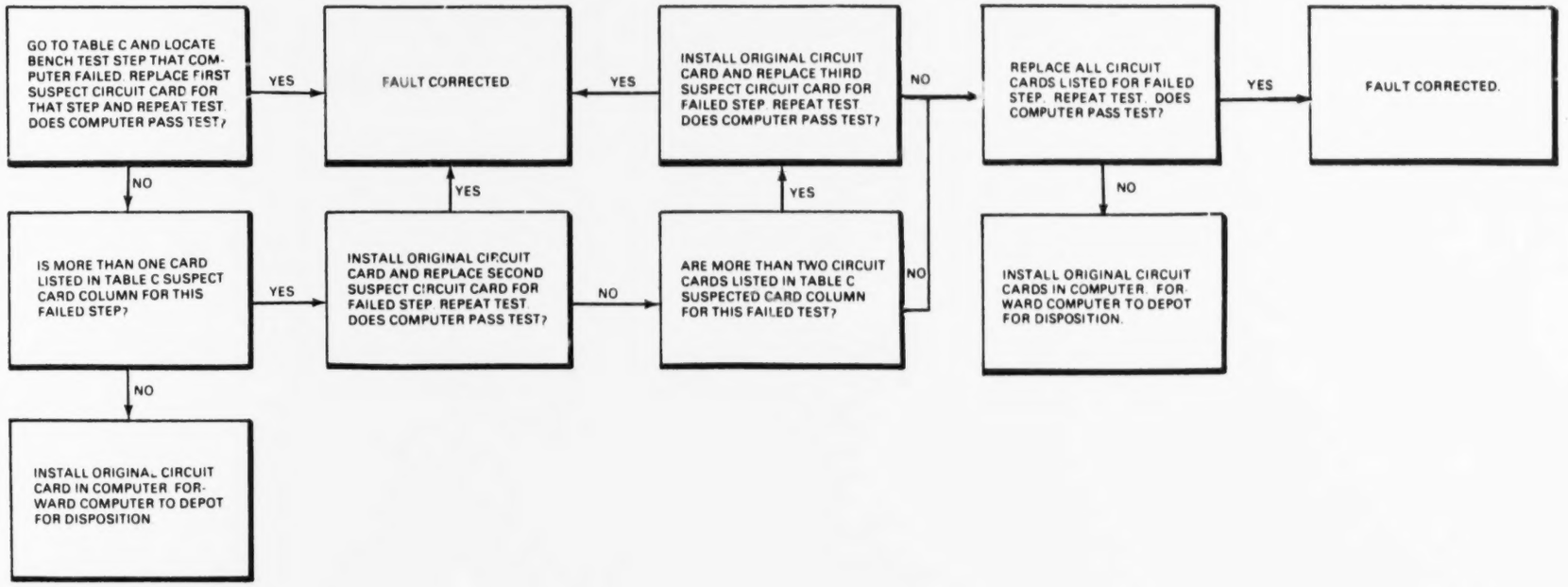
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23
AFCS Computer Cover Removed

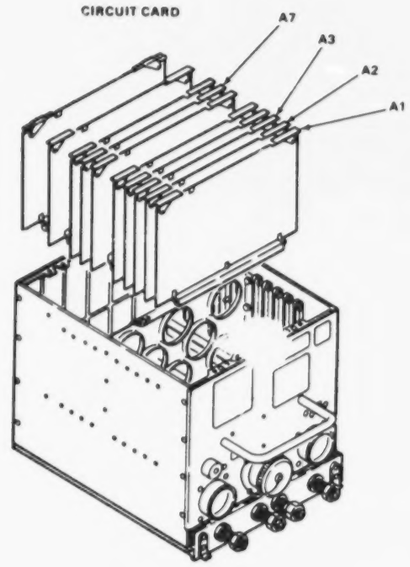

GO TO TABLE C AND LOCATE BENCH TEST STEP THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
IS MORE THAN ONE CARD LISTED IN TABLE C SUSPECT CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE C SUSPECTED CARD COLUMN FOR THIS FAILED TEST?
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION

GO TO NEXT PAGE

11-5.7 AFCS COMPUTER FAILS TEST 5 (ROLL AXIS TEST) (Continued)

TABLE C. ROLL AXIS TEST FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
167-207	A2
208-217	A7, A1, A2
218-231	A1, A2
232-235	A1, A2
236-245	A2
264-273	A7
281-283	A2
284-343	A2, A1, A3



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END OF TASK

11-5.8 AFCS COMPUTER FAILS TEST 6 (YAW AXIS TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

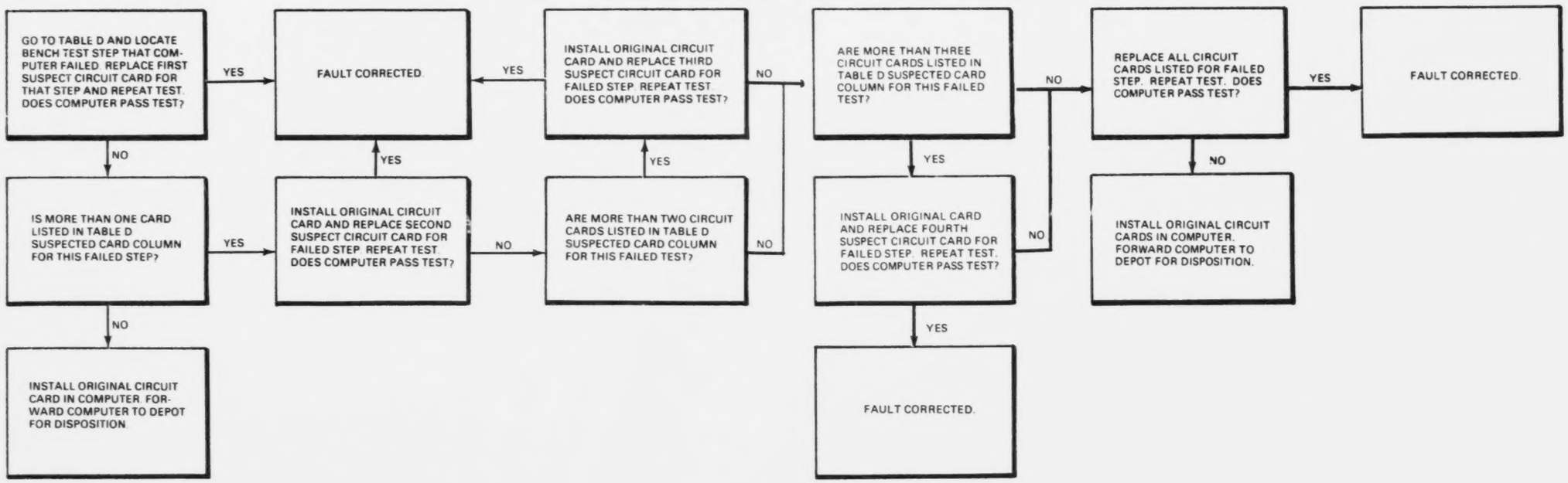
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Removed

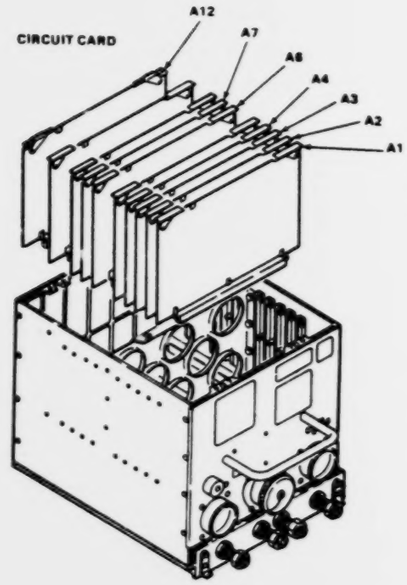

GO TO TABLE D AND LOCATE BENCH TEST STEP THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
IS MORE THAN ONE CARD LISTED IN TABLE D SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE D SUSPECTED CARD COLUMN FOR THIS FAILED TEST?
NO
ARE MORE THAN THREE CIRCUIT CARDS LISTED IN TABLE D SUSPECTED CARD COLUMN FOR THIS FAILED TEST?
YES
INSTALL ORIGINAL CARD AND REPLACE FOURTH SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
FAULT CORRECTED.
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.

GO TO NEXT PAGE

11-5.8 AFCS COMPUTER FAILS TEST 6 (YAW AXIS TEST) (Continued)

TABLE D. YAW AXIS TEST FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
345	A4, A6, A7, A12
356, 362	A4, A1
366	A4
374	A6, A4
386	A4, A7
394	A4, A2
395-403	A7, A1
404, 407	A1, A4
409	A4
410	A1, A4
412-429	A4, A7
430-441	A4, A6, A3
454	A1, A4
460	A4



11-5.9 AFCS COMPUTER FAILS TEST 7 (DASH TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

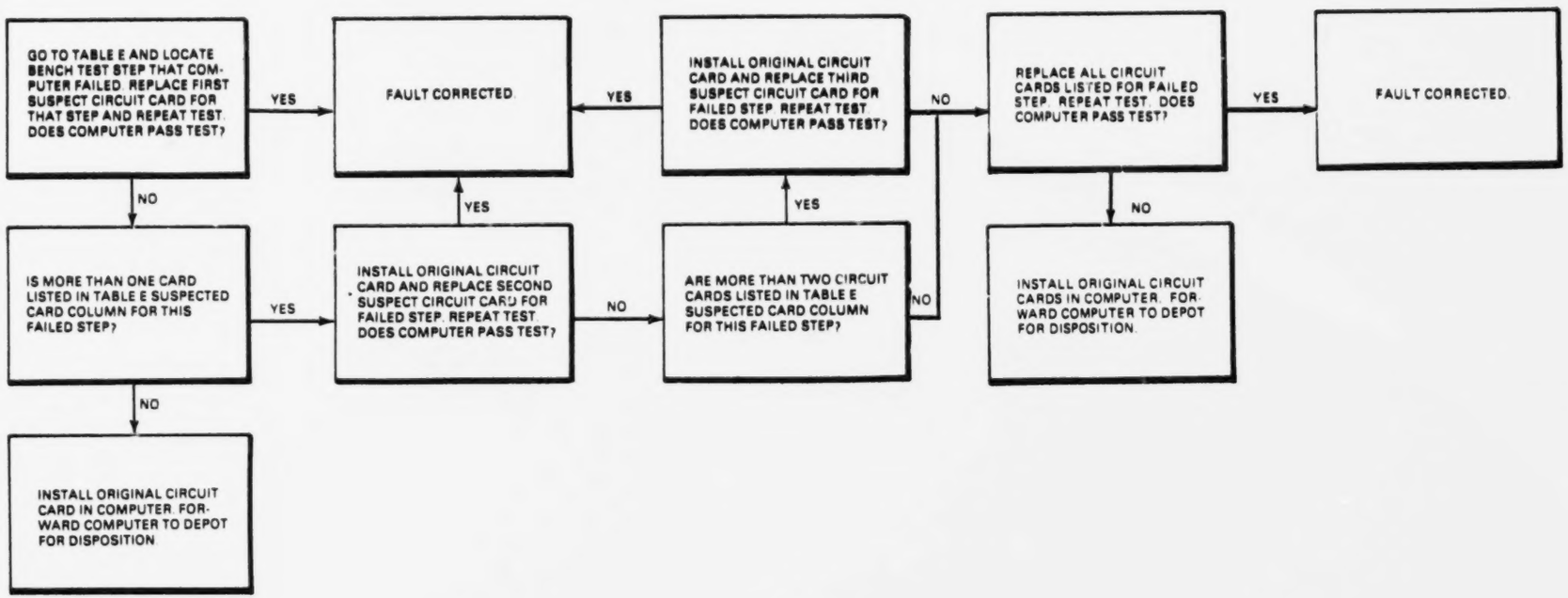
Applicable Configurations:
All
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Removed

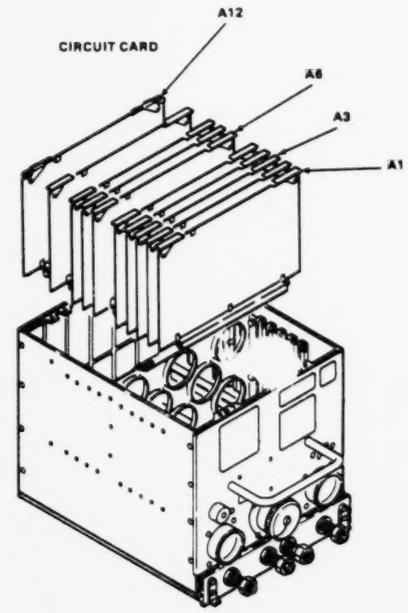

GO TO TABLE E AND LOCATE BENCH TEST STEP THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
IS MORE THAN ONE CARD LISTED IN TABLE E SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE E SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.

GO TO NEXT PAGE

11-5.9 AFCS COMPUTER FAILS TEST 7 (DASH TEST) (Continued)

TABLE E. DASH TEST
FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
470	A6, A12
486	A3, A1, A12
487	A3
494	A1, A3, A6
496	A3, A6
499	A1, A3, A6
501, 502	A3, A6
507	A3
511	A3, A1
517, 520	A3
527	A1, A3
531	A3
539	A3, A1, A12
547, 548	A1, A12
549	A3, A12
553, 558, 559, 563	A3, A1, A12
566	A1, A12



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END OF TASK

11-5.10 AFCS COMPUTER FAILS TEST 8 (LONGITUDINAL CYCLIC TRIM (LCT) TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

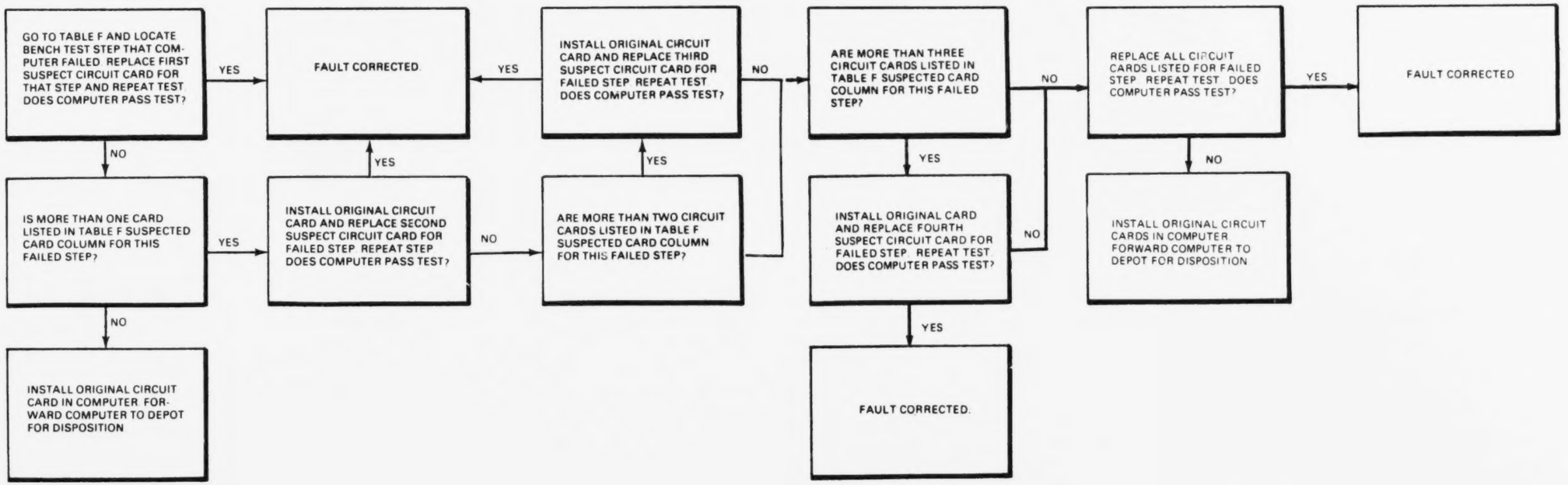
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 1520-240-23

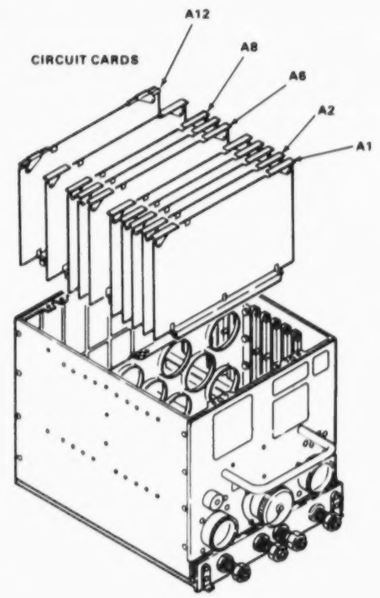
Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Removed


GO TO TABLE F AND LOCATE BENCH TEST STEP THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
ARE MORE THAN THREE CIRCUIT CARDS LISTED IN TABLE F SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED
NO
IS MORE THAN ONE CARD LISTED IN TABLE F SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT STEP. DOES COMPUTER PASS TEST?
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE F SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CARD AND REPLACE FOURTH SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER FORWARD COMPUTER TO DEPOT FOR DISPOSITION
YES
FAULT CORRECTED.
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION

GO TO NEXT PAGE

TABLE F. LCT TEST FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
582	A8, A12, A6, A3
584-585	A8
587-591	A8
594	A12
600-602	A8



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END OF TASK

11-5.11 AFCS COMPUTER FAILS TEST 9 (COLLECTIVE CONTROL DRIVER ACTUATOR (CCDA) TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

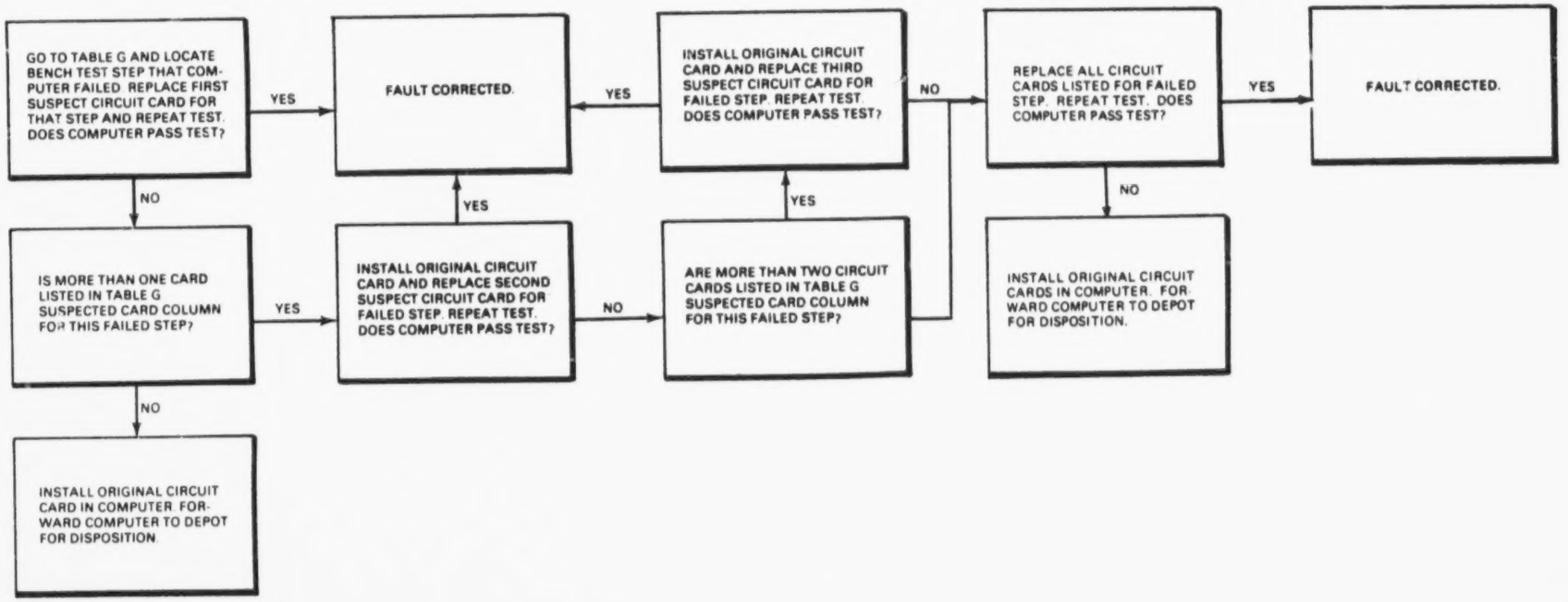
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Peformed (Task 11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Removed

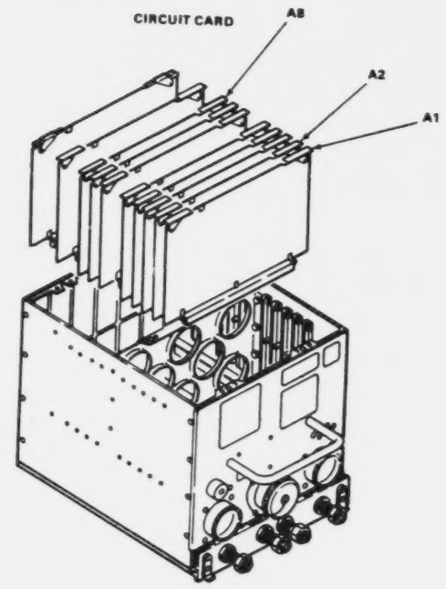

GO TO TABLE G AND LOCATE BENCH TEST STEP THAT COMPUTER FAILED. REPLACE FIRST SUSPECT CIRCUIT CARD FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED.
NO
IS MORE THAN ONE CARD LISTED IN TABLE G SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
NO
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE G SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
YES
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.

GO TO NEXT PAGE

11-5.11 AFCS COMPUTER FAILS TEST 9 (COLLECTIVE CONTROL DRIVER ACTUATOR (CCDA) TEST) (Continued)

TABLE G. CCDA TEST FAULT ANALYSIS

BENCH TEST STEP NO.	SUSPECT CIRCUIT CARD
613-660	A8, A2
664-668	A8, A2, A1



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END OF TASK

11-5.12 AFCS COMPUTER FAILS TEST 10 (YAW RATE TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

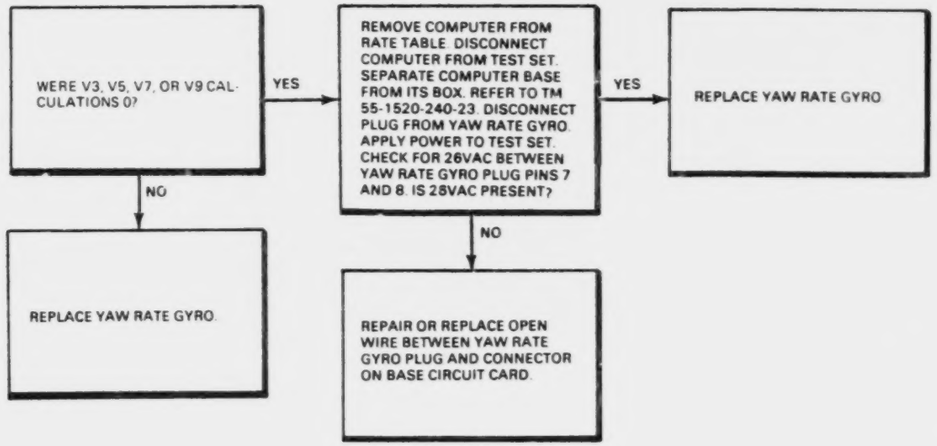
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

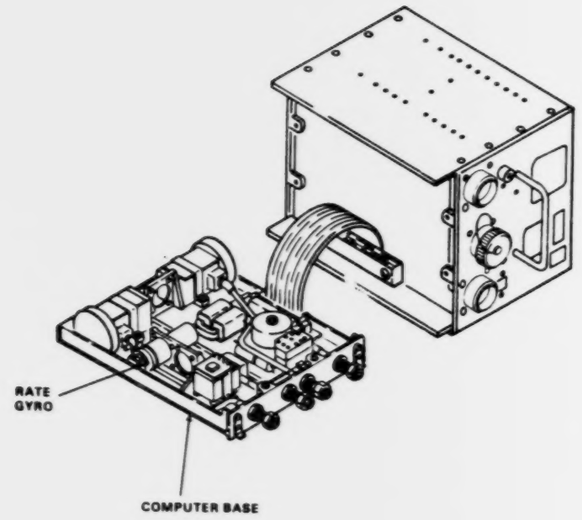
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23


WERE V3, V5, V7, OR V9 CALCULATIONS 0?
YES
REMOVE COMPUTER FROM RATE TABLE. DISCONNECT COMPUTER FROM TEST SET. SEPARATE COMPUTER BASE FROM ITS BOX. REFER TO TM 55-1520-240-23. DISCONNECT PLUG FROM YAW RATE GYRO. APPLY POWER TO TEST SET. CHECK FOR 26VAC BETWEEN YAW RATE GYRO PLUG PINS 7 AND 8. IS 26VAC PRESENT?
YES
REPLACE YAW RATE GYRO
NO
REPLACE YAW RATE GYRO.
NO
REPAIR OR REPLACE OPEN WIRE BETWEEN YAW RATE GYRO PLUG AND CONNECTOR ON BASE CIRCUIT CARD.



48 x 54

D145-12486-SPA

END OF TASK

11-5.13 AFCS COMPUTER FAILS TEST 11 (NORMAL ACCELERATION TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

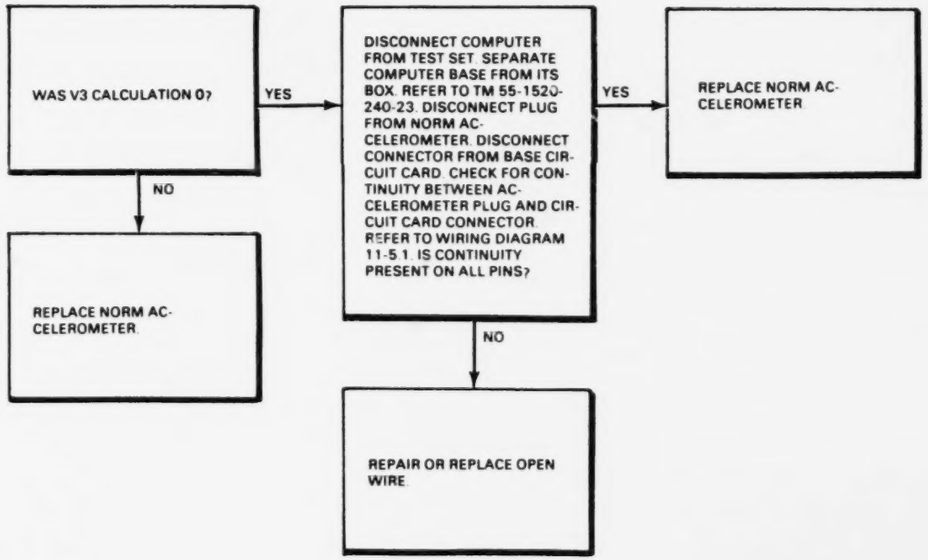
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

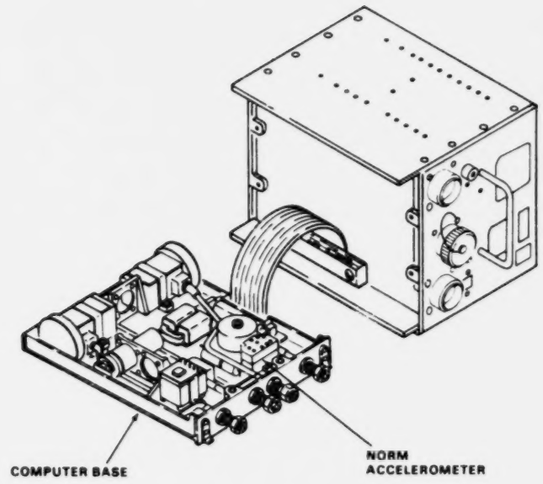
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)


WAS V3 CALCULATION 0?
YES
NO
REPLACE NORM ACCELEROMETER.
DISCONNECT COMPUTER FROM TEST SET. SEPARATE COMPUTER BASE FROM ITS BOX. REFER TO TM 55-1520-240-23. DISCONNECT PLUG FROM NORM ACCELEROMETER. DISCONNECT CONNECTOR FROM BASE CIRCUIT CARD. CHECK FOR CONTINUITY BETWEEN ACCELEROMETER PLUG AND CIRCUIT CARD CONNECTOR. REFER TO WIRING DIAGRAM 11-5.1. IS CONTINUITY PRESENT ON ALL PINS?
YES
NO
REPLACE NORM ACCELEROMETER.
REPAIR OR REPLACE OPEN WIRE.



11-5.14 AFCS COMPUTER FAILS TEST 12 (PRESSURE TRANSDUCERS TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

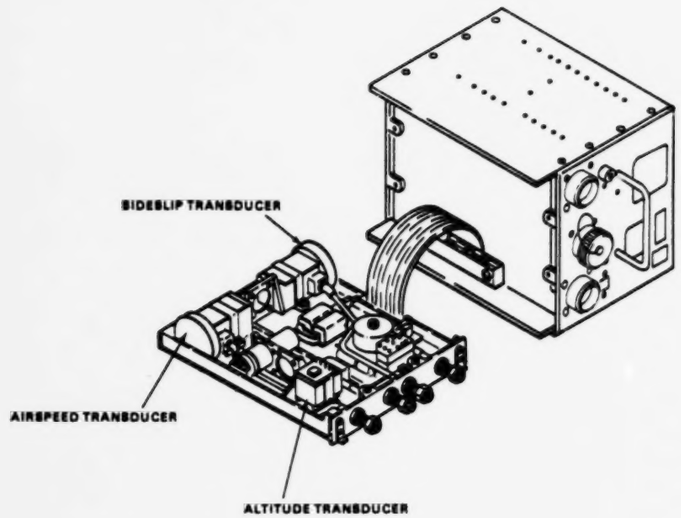
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)



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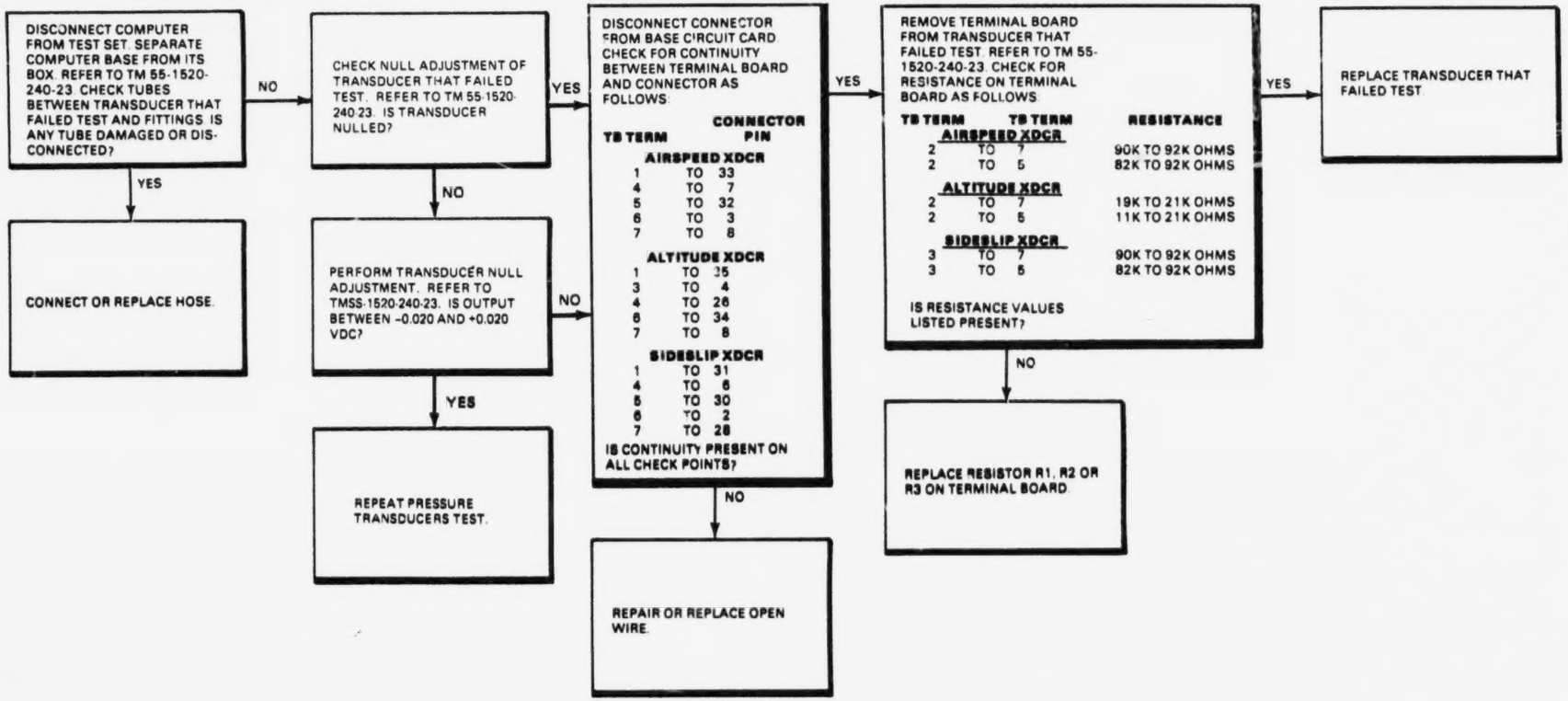
11-5.14 AFCS COMPUTER FAILS TEST 12 (PRESSURE TRANSDUCERS TEST) (Continued)


DISCONNECT COMPUTER FROM TEST SET. SEPARATE COMPUTER BASE FROM ITS BOX. REFER TO TM 55-1520-240-23. CHECK TUBES BETWEEN TRANSDUCER THAT FAILED TEST AND FITTINGS. IS ANY TUBE DAMAGED OR DISCONNECTED?
NO
YES
CONNECT OR REPLACE HOSE.
CHECK NULL ADJUSTMENT OF TRANSDUCER THAT FAILED TEST. REFER TO TM 55-1520-240-23. IS TRANSDUCER NULLED?
YES
NO
PERFORM TRANSDUCER NULL ADJUSTMENT. REFER TO TMSS-1520-240-23. IS OUTPUT BETWEEN -0.020 AND +0.020 VDC?
NO
YES
REPEAT PRESSURE TRANSDUCERS TEST.
DISCONNECT CONNECTOR FROM BASE CIRCUIT CARD. CHECK FOR CONTINUITY BETWEEN TERMINAL BOARD AND CONNECTOR AS FOLLOWS:
TB TERM — CONNECTOR PIN
AIRSPEED XDCR
1 TO 33
4 TO 7
5 TO 32
6 TO 3
7 TO 8
ALTITUDE XDCR
1 TO 35
3 TO 4
4 TO 26
6 TO 34
7 TO 8
SIDESLIP XDCR
1 TO 31
4 TO 6
5 TO 30
6 TO 2
7 TO 28
IS CONTINUITY PRESENT ON ALL CHECK POINTS?
NO
REPAIR OR REPLACE OPEN WIRE.
YES
REMOVE TERMINAL BOARD FROM TRANSDUCER THAT FAILED TEST. REFER TO TM 55-1520-240-23. CHECK FOR RESISTANCE ON TERMINAL BOARD AS FOLLOWS:
TB TERM — TB TERM — RESISTANCE
AIRSPEED XDCR
2 TO 7 — 90K TO 92K OHMS
2 TO 5 — 82K TO 92K OHMS
ALTITUDE XDCR
2 TO 7 — 19K TO 21K OHMS
2 TO 5 — 11K TO 21K OHMS
SIDESLIP XDCR
3 TO 7 — 90K TO 92K OHMS
3 TO 5 — 82K TO 92K OHMS
IS RESISTANCE VALUES LISTED PRESENT?
NO
REPLACE RESISTOR R1, R2 OR R3 ON TERMINAL BOARD.
YES
REPLACE TRANSDUCER THAT FAILED TEST.

END OF TASK

11-5.15 AFCS COMPUTER FAILS TEST 13 (BITE TEST)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

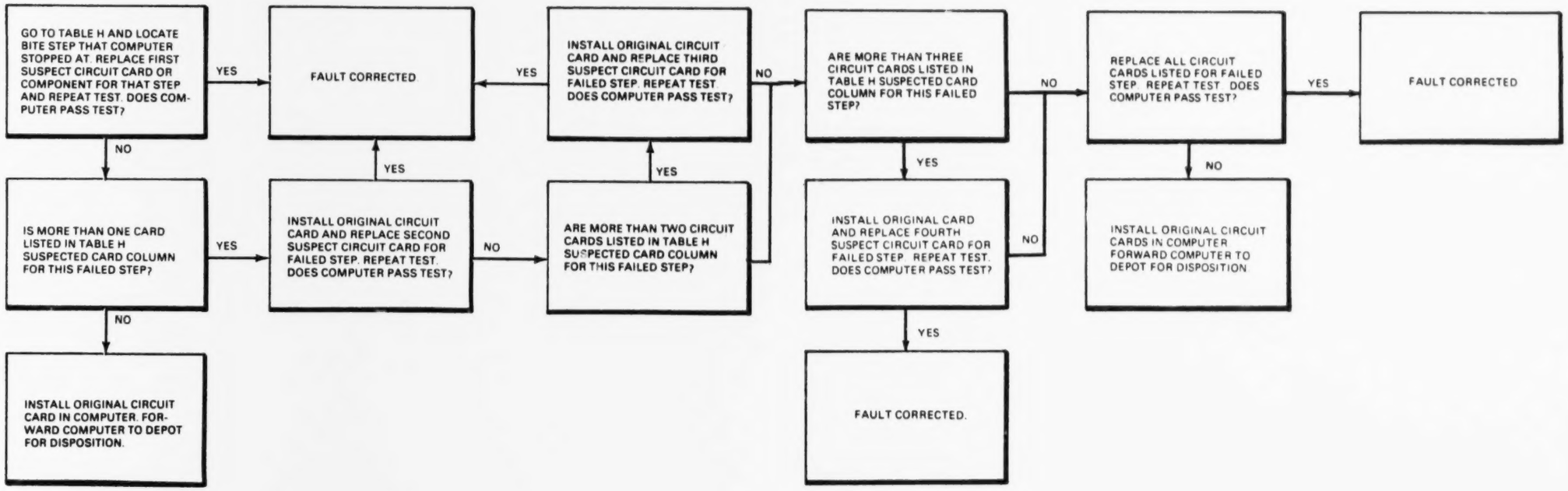
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

Equipment Condition:
Visual Check of AFCS Computer Performed (Task 11-5.2)
TM 55-1520-240-23:
AFCS Computer Cover Required

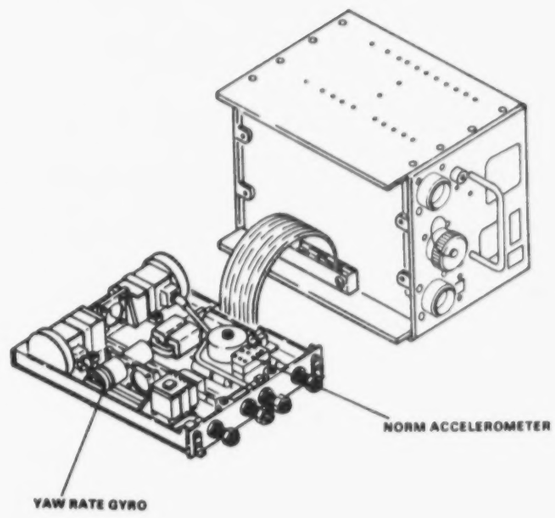

GO TO TABLE H AND LOCATE BITE STEP THAT COMPUTER STOPPED AT. REPLACE FIRST SUSPECT CIRCUIT CARD OR COMPONENT FOR THAT STEP AND REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE THIRD SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
ARE MORE THAN THREE CIRCUIT CARDS LISTED IN TABLE H SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
NO
REPLACE ALL CIRCUIT CARDS LISTED FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
FAULT CORRECTED
NO
INSTALL ORIGINAL CIRCUIT CARDS IN COMPUTER FORWARD COMPUTER TO DEPOT FOR DISPOSITION
YES
INSTALL ORIGINAL CARD AND REPLACE FOURTH SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
NO
YES
FAULT CORRECTED.
YES
ARE MORE THAN TWO CIRCUIT CARDS LISTED IN TABLE H SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
NO
YES
INSTALL ORIGINAL CIRCUIT CARD AND REPLACE SECOND SUSPECT CIRCUIT CARD FOR FAILED STEP. REPEAT TEST. DOES COMPUTER PASS TEST?
YES
IS MORE THAN ONE CARD LISTED IN TABLE H SUSPECTED CARD COLUMN FOR THIS FAILED STEP?
NO
INSTALL ORIGINAL CIRCUIT CARD IN COMPUTER. FORWARD COMPUTER TO DEPOT FOR DISPOSITION.

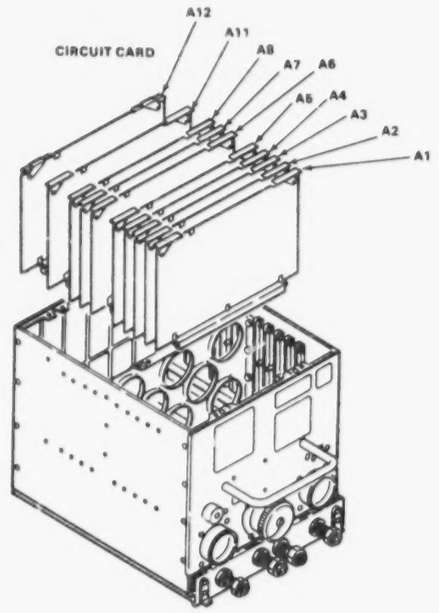
GO TO NEXT PAGE

11-5.15 AFCS COMPUTER FAILS TEST 13 (BITE TEST) (Continued)

TABLE H. BITE TEST FAULT ANALYSIS

BITE STEP	CIRCUIT CARD OR SUSPECT COMPONENT
0-3	A5, A6, A11
4, 5	A3
6	A8, A12, A3, A6
7, 8	A3, A2, A4
9	A8, A12, A3, A6
11-16	A2, A1
17	A4, A2
18	A8, A12
19-25	A3, A12, A6
26-31	A8, A1
32-44	A4, A8, A1, A7, A6
45-52	A2, A7, A1
54	NORMAL ACCELEROMETER, A8
56, 57	YAW RATE GYRO, A4, A1
70, 71	A3
75, 76	A4
80, 81	A2
85, 86	A12
87	A8
89	A3
91	A4
93	A2
95	A8, A1





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END OF TASK

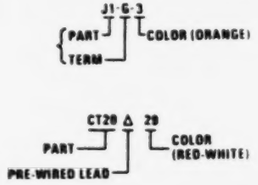
11-6 COCKPIT CONTROL DRIVE ACTUATOR (CCDA)

11-6 COCKPIT CONTROL DRIVER ACTUATOR (CCDA)

11-6.1 COCKPIT CONTROL DRIVE ACTUATOR DIAGRAM

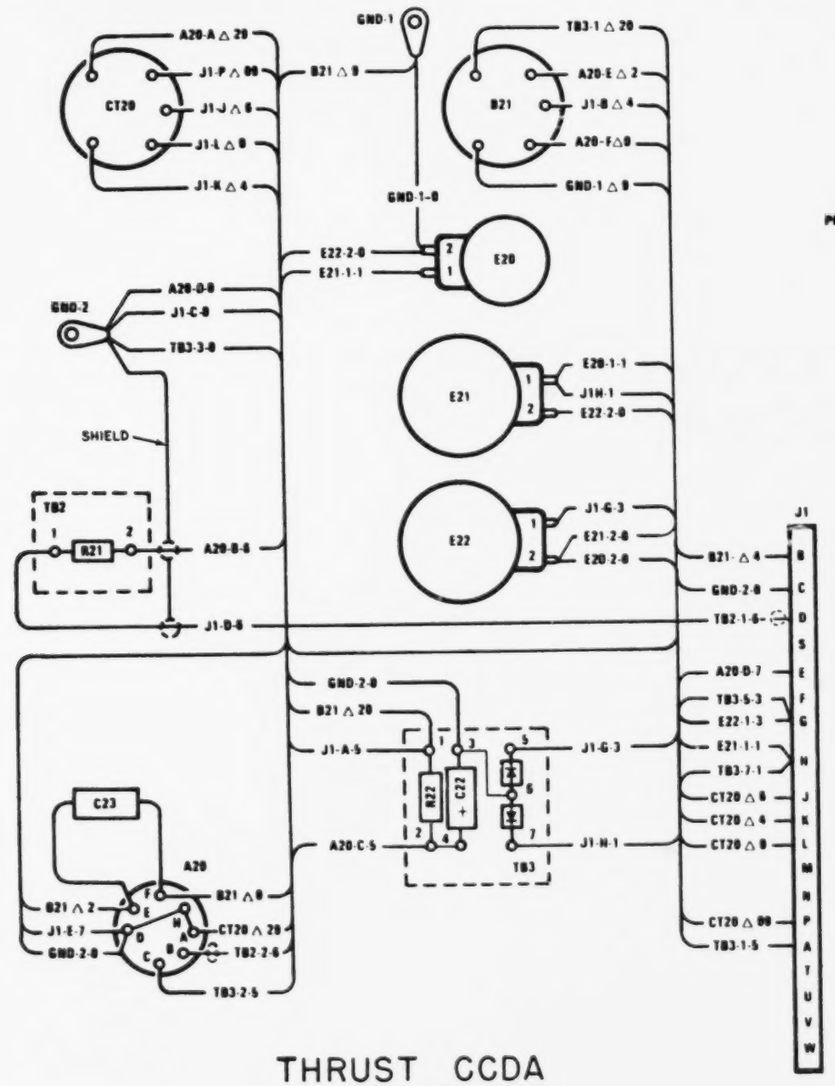
NOTES:

EXAMPLE WIRE DESIGNATIONS

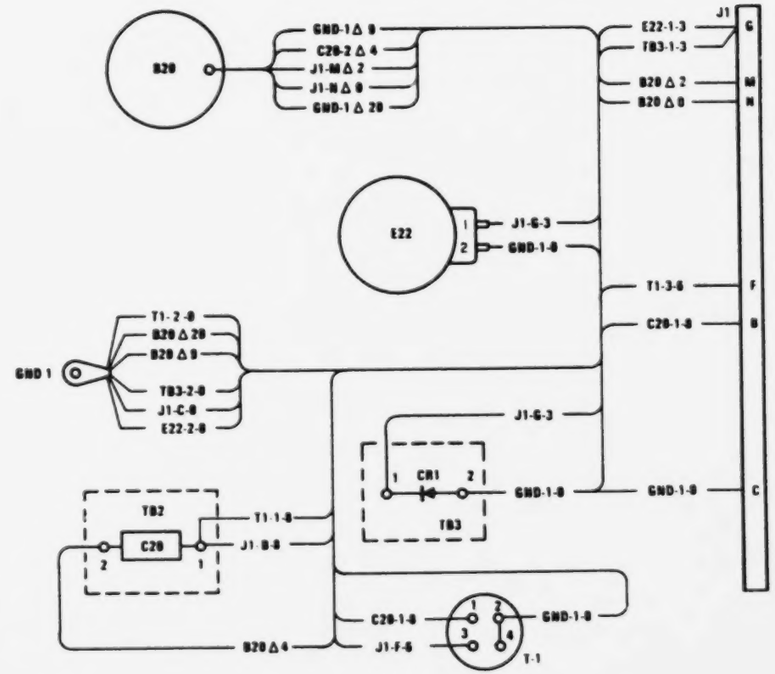


EIA COLOR CODE

0 - BLACK	5 - GREEN
1 - BROWN	6 - BLUE
2 - RED	7 - VIOLET
3 - ORANGE	8 - GREY
4 - YELLOW	9 - WHITE



THRUST CCDA



PITCH CCDA

90s54

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11-6.2 COCKPIT CONTROL DRIVE ACTUATOR (CCDA) VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

References:
TM 55-1520-240-23

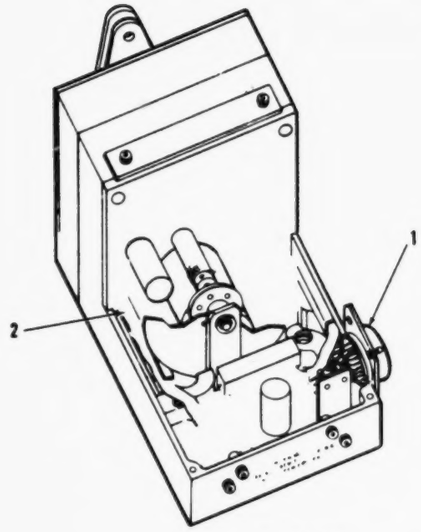
Equipment Condition:
TM 55-1520-240-23
CCDA Cover Removed.

TASK	RESULT
1. **Check pins in receptacle (1).**	If any pin is bent, straighten it. If any pin is burnt, broken, or corroded, replace receptacle (1).
2. **Check parts mounted on inside of actuator (2).**	If any part is loose, tighten it. If any part is burnt or damaged, replace it.

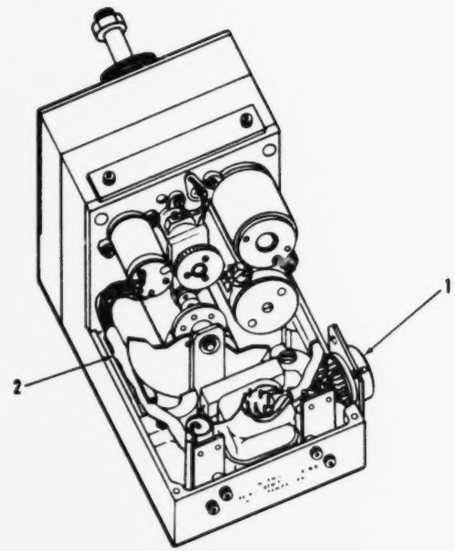
FOLLOW-ON MAINTENANCE

TM 55-1520-240-23:

CCDA Cover Installed
Test Pitch or Thrust Cockpit Control Drive Actuator (CCDA)



PITCH CCDA



THRUST CCDA

46.1 84

D146 12471 SPA

END OF TASK

11-6.3 THRUST COCKPIT CONTROL DRIVE ACTUATOR FAILS CIRCUIT RESISTANCE TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

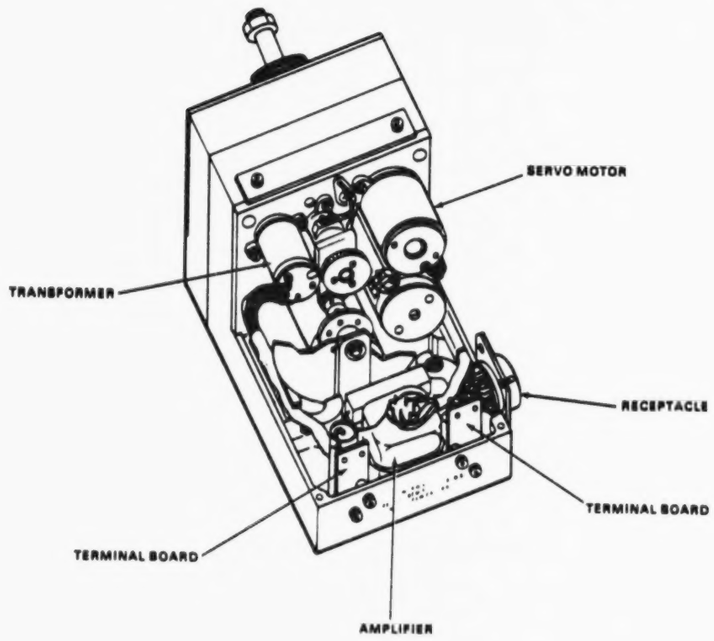
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

Reference:
TM 55-1520-240-23

Equipment Condition:
Visual Check of CCDA Performed (Task 11-6.2)

DID ACTUATOR FAIL TEST STEP 2 OR STEP 5?
NO
FORWARD ACTUATOR TO DEPOT FOR DISPOSITION.
YES
PICK ONE PIN OF FAILED CIRCUIT RESISTANCE TEST AND LOCATE OTHER END OF WIRE REFER TO WIRING DIAGRAM 11-6.1 CHECK CONTINUITY ON THIS WIRE IS CONTINUITY PRESENT?
YES
LOCATE WIRE END OF OTHER PIN THAT FAILED TEST REFER TO WIRING DIAGRAM 11-6.1 CHECK CONTINUITY ON THIS WIRE IS CONTINUITY PRESENT?
YES
REPLACE COMPONENT CONNECTED TO THESE WIRES.
NO
NO
REPAIR OR REPLACE OPEN WIRE.



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D145-12472-8PA

END OF TASK

11-6.4 THRUST COCKPIT CONTROL DRIVE ACTUATOR FAILS BRAKE FUNCTION TEST

FAULT ISOLATION PROCEDURE

INITIAL STEP

Applicable Configurations:
All

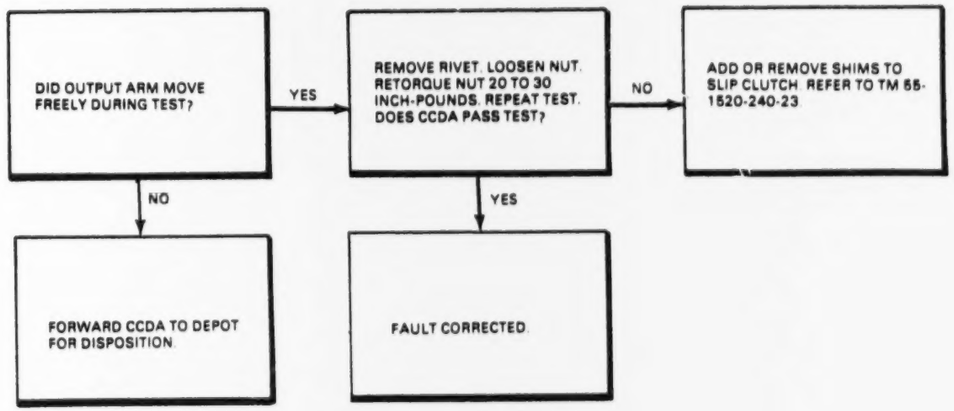
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

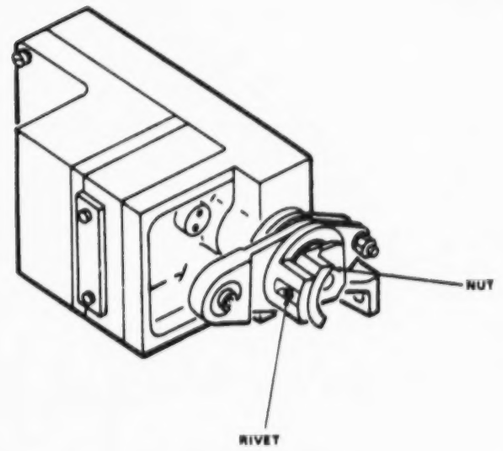
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

Reference:
TM 55-1520-240-23

Equipment Condition:
Visual Check of CCDA Performed (Task 11-6.2)


DID OUTPUT ARM MOVE FREELY DURING TEST?
YES
REMOVE RIVET. LOOSEN NUT. RETORQUE NUT 20 TO 30 INCH-POUNDS. REPEAT TEST. DOES CCDA PASS TEST?
NO
ADD OR REMOVE SHIMS TO SLIP CLUTCH. REFER TO TM 55-1520-240-23
NO
FORWARD CCDA TO DEPOT FOR DISPOSITION.
YES
FAULT CORRECTED.



11-6.5 THRUST COCKPIT CONTROL DRIVE ACTUATOR FAILS NULL VOLTAGE AND PHASING TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

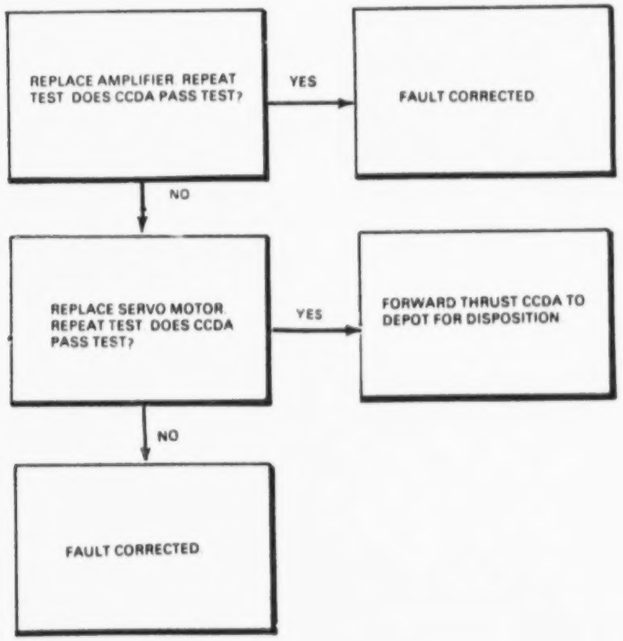
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

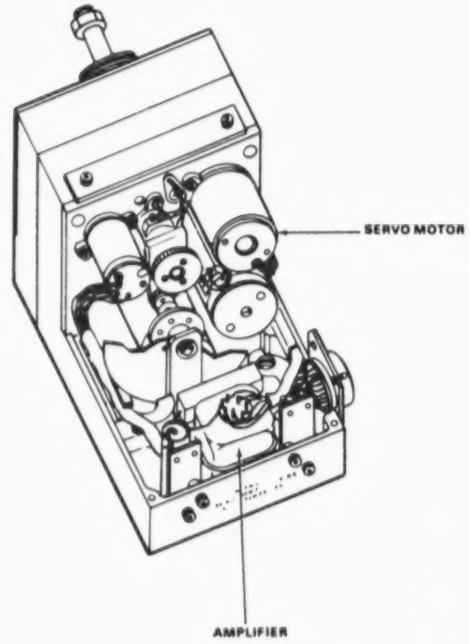
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

Reference:
TM 55-1520-240-23

Equipment Condition:
Visual Check of CCDA Performed (Task 11-6.2)





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END OF TASK

11-6.6 PITCH COCKPIT CONTROL DRIVE ACTUATOR FAILS CIRCUIT RESISTANCE TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

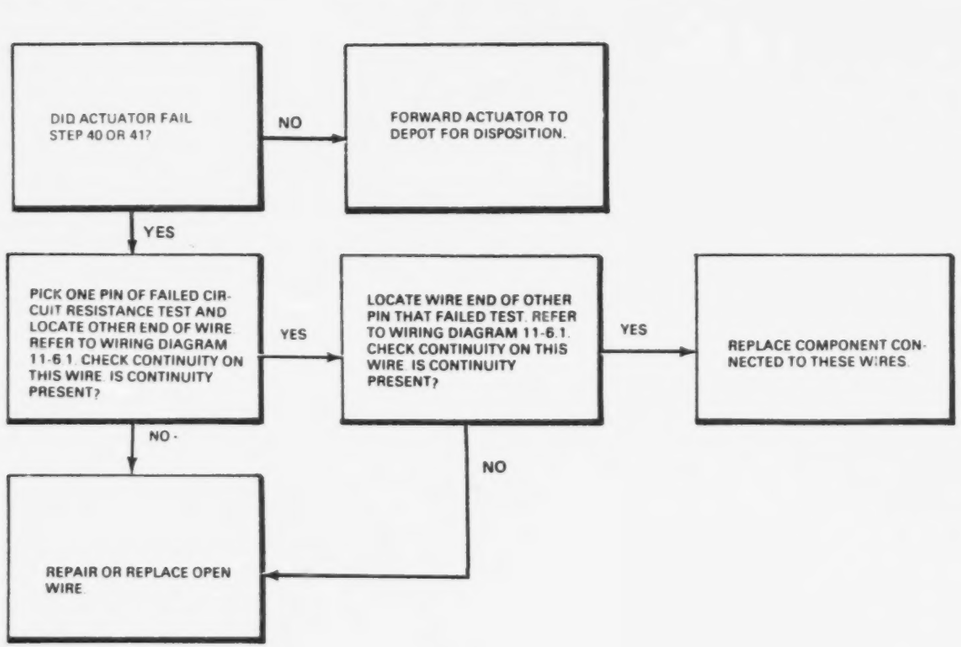
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

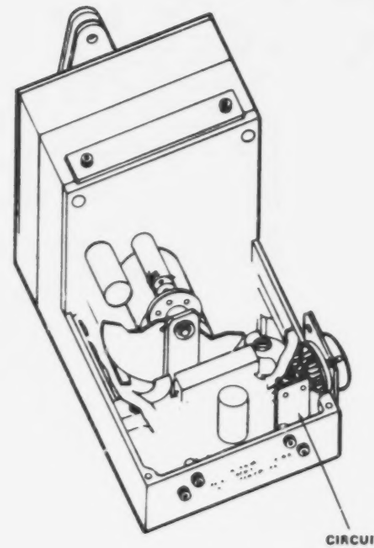
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

Reference:
TM 55-1520-240-23

Equipment Condition:
Visual Check of CCDA Performed (Task 11-6.2)


DID ACTUATOR FAIL STEP 40 OR 41?
NO
FORWARD ACTUATOR TO DEPOT FOR DISPOSITION.
YES
PICK ONE PIN OF FAILED CIRCUIT RESISTANCE TEST AND LOCATE OTHER END OF WIRE. REFER TO WIRING DIAGRAM 11-6.1. CHECK CONTINUITY ON THIS WIRE. IS CONTINUITY PRESENT?
YES
LOCATE WIRE END OF OTHER PIN THAT FAILED TEST. REFER TO WIRING DIAGRAM 11-6.1. CHECK CONTINUITY ON THIS WIRE. IS CONTINUITY PRESENT?
YES
REPLACE COMPONENT CONNECTED TO THESE WIRES.
NO
NO
REPAIR OR REPLACE OPEN WIRE.



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D148.12475.SPA

END OF TASK

11-6.7 PITCH COCKPIT CONTROL DRIVE ACTUATOR FAILS BRAKE FUNCTION TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

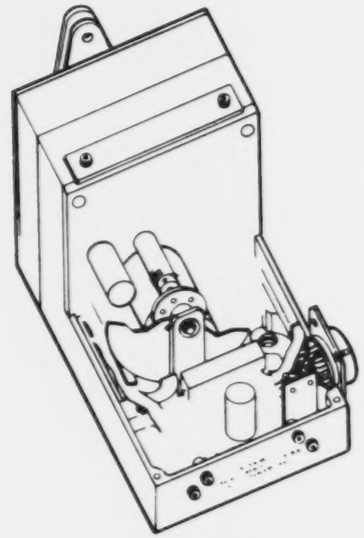
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

Reference:
TM 55-1520-240-23

Equipment Condition:
Visual Check of CCDA Performed (Task 11-6.2)

FORWARD CCDA TO DEPOT FOR DISPOSITION



PITCH CCDA

45 x 54

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END OF TASK

11-6.8 PITCH COCKPIT CONTROL DRIVE ACTUATOR FAILS TRIM MOTOR TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

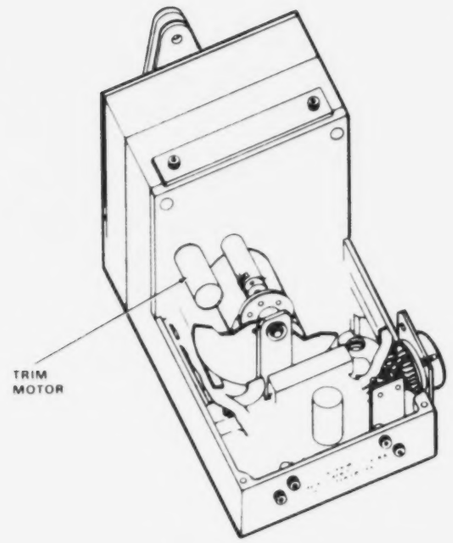
Tools:
Electronic Repairer's Tool Kit,
NSN 5180-00-064-5178
Multimeter

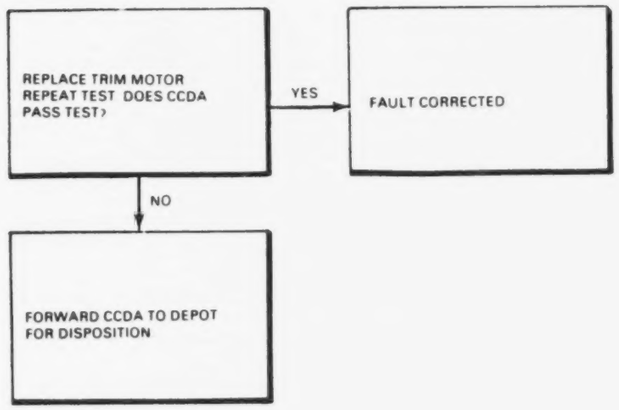
Materials:
None

Personnel Required:
35M20 Avionic Navigation and Flight Control Equipment Repairer.

Reference:
TM 55-1520-240-23

Equipment Condition:
Visual Check of CCDA Performed (Task 11-6.2)





CHAPTER 12

UTILITY SYSTEMS TROUBLESHOOTING

CHAPTER 12
UTILITY SYSTEM TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 12 contains procedures for Utility System troubleshooting. Each system and failure symptom is listed below. Included in this chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for the Utility System.

Refer to TM 55-1520-240-23 for required maintenance procedures.

SYSTEM	PARA
WINDSHIELD ANTI-ICING	12-1
FIRE DETECTION	12-2
FIRE EXTINGUISHING	12-3
WINDSHIELD WIPERS	12-4

FAILURE SYMPTOM LIST

WINDSHIELD ANTI-ICING

SYMPTOM	TASK
CTR WSHLD ANTI-ICE CONT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-1.3
CTR WSHLD ANTI-ICE HEAT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-1.3
CENTER WINDSHIELD CONTINUES TO HEAT WHEN CTR WINDSHIELD SWITCH IS AT OFF	12-1.3
CENTER WINDSHIELD DOES NOT GET WARM	12-1.3
COPLT WSHLD CONT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-1.3
COPILOT'S WINDSHIELD CONTINUES TO HEAT WHEN CPLT WINDSHIELD ANTI-ICE SWITCH IS AT OFF	12-1.3
COPILOT'S WINDSHIELD DOES NOT GET WARM	12-1.3
COPLT WSHLD HEAT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-1.3
PILOT WSHLD ANTI-ICE CONT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-1.3
PILOT WSHLD ANTI-ICE HEAT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-1.3
PILOT'S WINDSHIELD CONTINUES TO HEAT WHEN PLT WINDSHIELD SWITCH IS AT OFF	12-1.3
PILOT'S WINDSHIELD DOES NOT GET WARM	12-1.3

FIRE DETECTION

SYMPTOM	TASK
FIRE DET CIRCUIT BREAKER WILL NOT STAY CLOSED	12-2.4
NO. 1 ENGINE AND NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTIONS DO NOT LIGHT DURING TEST	12-2.4
NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUT-OFF CAPTION DOES NOT LIGHT DURING TEST	12-2.4
NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUT-OFF CAPTION LIT	12-2.4
NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUT-OFF CAPTION DOES NOT LIGHT DURING TEST	12-2.4
NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUT-OFF CAPTION LIT	12-2.4

FAILURE SYMPTOM LIST (Continued)

SYMPTOM	TASK
FIRE EXT CIRCUIT BREAKER WILL NOT STAY CLOSED	12-3.4
MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 1 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 1	12-3.4
MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 2 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 2	12-3.4
WINDSHIELD WIPERS ARE NOISY	12-4.3
WINDSHIELD WIPER CIRCUIT BREAKER WILL NOT STAY CLOSED	12-4.3
WINDSHIELD WIPERS DO NOT RETURN TO PARK POSITION	12-4.3
WINDSHIELD WIPER OR WIPERS DO NOT OPERATE AT ONE SWITCH POSITION OR ANY SWITCH POSITION	12-4.3

FIRE EXTINGUISHER

WINDSHIELD WIPERS

UTILITY SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

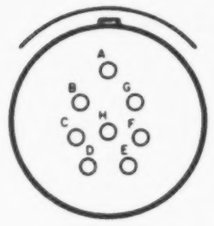
REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD031		151	CONSOLE — FWD CTR INST PNL			
GD035		150	FWD AND ABOVE OVHD PNL	61	40	10L
GD038		151	NOSE COMPARTMENT	40	0	0
GD041		151	UNDER RH COCKPIT FLOOR	95	-25	30R
GD042		151	UNDER LH COCKPIT FLOOR	90	-20	35L
GD098		151	LH AFT CABIN	477	30	52L
GD099		151	RH AFT CABIN	508	25	50R
GD124		151	UNDER AFT PYLON	500	72	0
GD125		151	UNDER AFT PYLON	500	72	0
GD246		151	UNDER AFT PYLON	500	72	0
GD247		151	UNDER AFT PYLON	500	72	0
GD282		151	NOSE COMPARTMENT	40	0	0
GD284		151	NOSE COMPARTMENT	40	0	0
GD285		151	NOSE COMPARTMENT	40	0	0
TB 36			OVERHEAD PANEL-COCKPIT	80	40	12R
TB 48			NOSE COMPARTMENT	50	-15	2L
TB 62			NO. 2 PDP SIDE PANEL	90	-15	30R
083K1	MS25035-1	110	NOSE COMPARTMENT	45	-10	8L
083K2	MS24149D1	106	NOSE COMPARTMENT	40	-17	2L
083K3	MS25035-1	110	NOSE COMPARTMENT	45	-10	5L
083P1	MS3476W16-8S	22	CPLT WSHLD TEMP CONT-NOSE	45	-10	0
083P2	MS3476W16-8SW	22	CTR WSHLD TEMP CONT-NOSE	45	-10	4L
083P3	MS3476W16-8S	22	PLT WSHLD TEMP CONT-NOSE	45	-10	8L
133P1	MS3456W10SL-3S	45	WSHLD WIPER MOTOR	61	50	0
231P1	35303-11	FENWAL	NO. 1 ENG DISC	484	45	52L
231P2	35303-11	FENWAL	NO. 1 ENG DISC	484	45	52L
231P3	35303-11	FENWAL	NO. 2 ENG DISC	484	45	52R
231P4	35303-11	FENWAL	NO. 2 ENG DISC	484	45	52R
231P5	MS3456W18-8S	53	FIRE DET CONT	492	20	52L
231P6	MS3456W18-8S	53	FIRE DET CONT	492	20	52R
300J1	M83723-74A2041N	40	NO. 1 PDP			
300P1	M83723-75A2041N	40	NO. 1 PDP			
300J2	M83723-74A2255N	42	NO. 1 PDP			
300P2	M83723-75A2255N	42	NO. 1 PDP			
300J4	M83723-74A2461N	43	NO. 1 PDP			
300P4	M83723-75A2461N	43	NO. 1 PDP			
300J5	M83723-74A2041N	40	NO. 2 PDP			
300P5	M83723-75A2041N	40	NO. 2 PDP			
300J6	M83723-74A24616	43	NO. 2 PDP			
300P6	M83723-75A24616	43	NO. 2 PDP			
300J8	M83723-74A2461N	42	NO. 2 PDP			
300P8	M83723-75A2461N	42	NO. 2 PDP			
300J11	M83723-73A2255N	42	CONSOLE-UNDERFLOOR	85	-20	5R
300P11	M83723-76A2255N	42	CONSOLE-UNDERFLOOR	85	-20	5R
300J15	M83723-74A24617	43	CONSOLE-UNDERFLOOR	85	-20	10R
300P15	M83723-75A24617	43	CONSOLE-UNDERFLOOR	85	-20	10R
300J18	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P18	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J19	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J20	M83723-74A2461N	43	OVERHEAD PANEL — COCKPIT			
300P20	M83723-75A2461N	43	OVERHEAD PANEL — COCKPIT			
300J23	M83723-74A2255N	42	OVERHEAD PANEL — COCKPIT			
300P23	M83723-75A2255N	42	OVERHEAD PANEL — COCKPIT			
300J45	M83723-73A2461N	43	HEATER COMPARTMENT -OVHD	105	40	30R
300P45	M83723-76A2461N	43	HEATER COMPARTMENT -OVHD	105	40	30R
300J48	M83723-74A2461N	43	ELECTRONICS COMPARTMENT -OVHD	120	40	20L
300P48	M83723-75A2461N	43	ELECTRONICS COMPARTMENT -OVHD	120	40	20L
300J51	M83723-74A2461N	43	AFT CROWN	460	45	20R
300P51	M83723-75A2461N	43	AFT CROWN	460	45	20R
300J52	M83723-74A2255N	42	AFT CROWN	460	45	30L
300P52	M83723-75A2255N	42	AFT CROWN	460	45	30L
300J58	M83723-73A22558	42	CONSOLE - UNDERFLOOR	85	-20	12L
300P58	M83723-76A22558	42	CONSOLE - UNDERFLOOR	85	-20	12L
300J61	M83723-73A24619	43	CONSOLE - UNDERFLOOR	85	-20	10L
300P61	M83723-76A24619	43	CONSOLE -UNDERFLOOR	85	-20	10L

UTILITY SYSTEMS ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

22

PLUG



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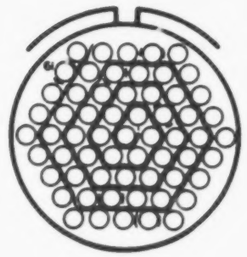
RECEPTACLE



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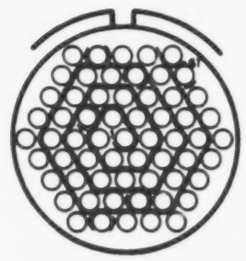
PLUG



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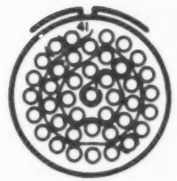

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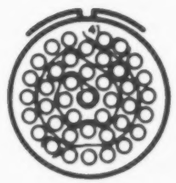

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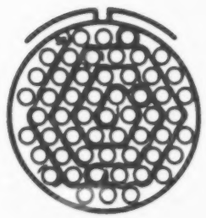

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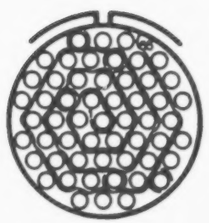

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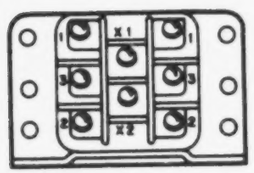
UTILITY SYSTEMS ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RELAY



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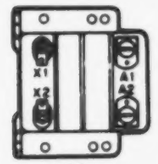
RELAY



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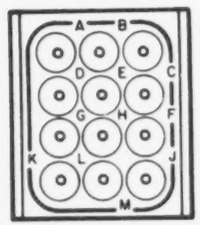
GND MODULE



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GND STUD

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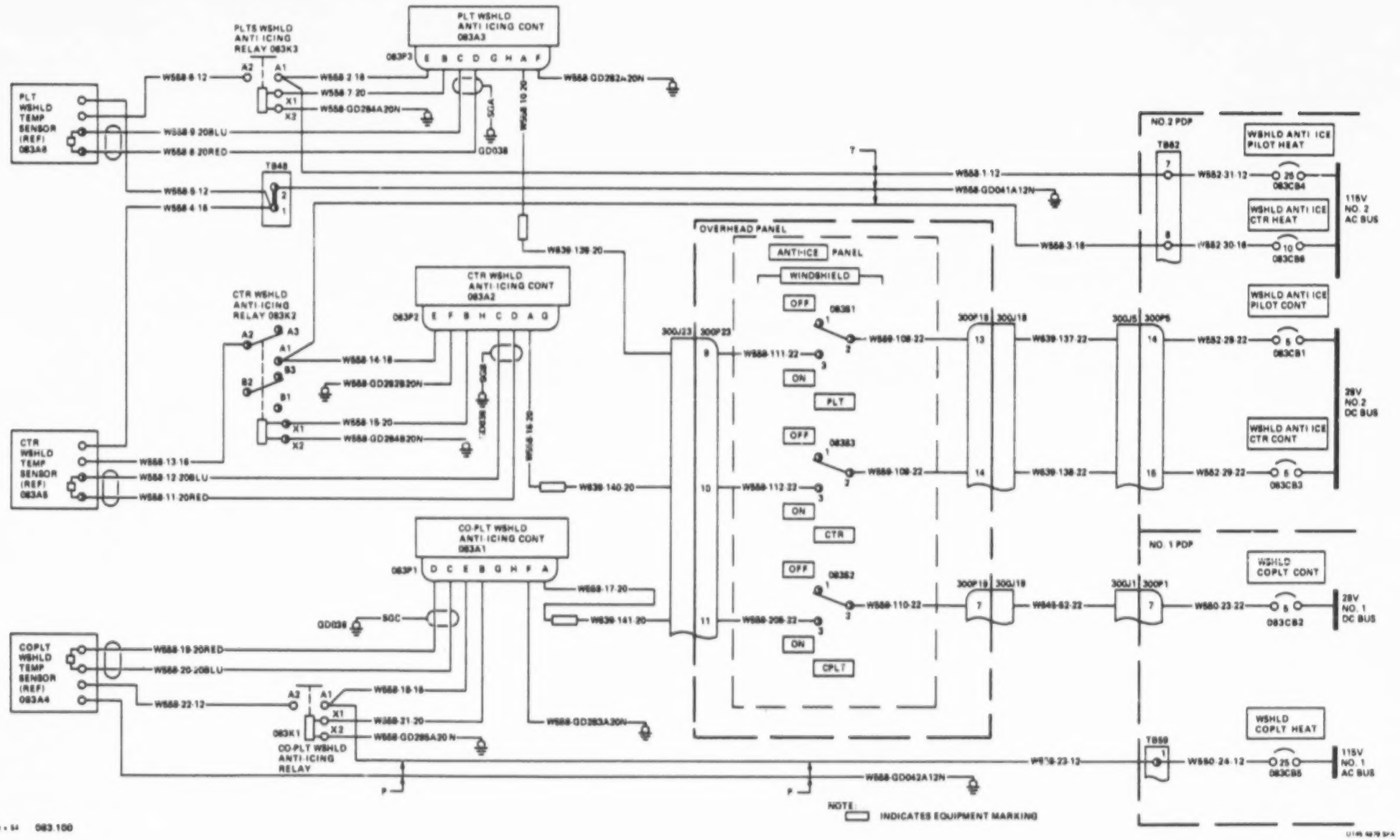
12-1 WINDSHIELD ANTI-ICING SYSTEM

12-1 WINDSHIELD ANTI-ICING SYSTEM

12-1.1 WINDSHIELD ANTI-ICING SYSTEM WIRING DIAGRAM



12-1.2 WINDSHIELD ANTI-ICING SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

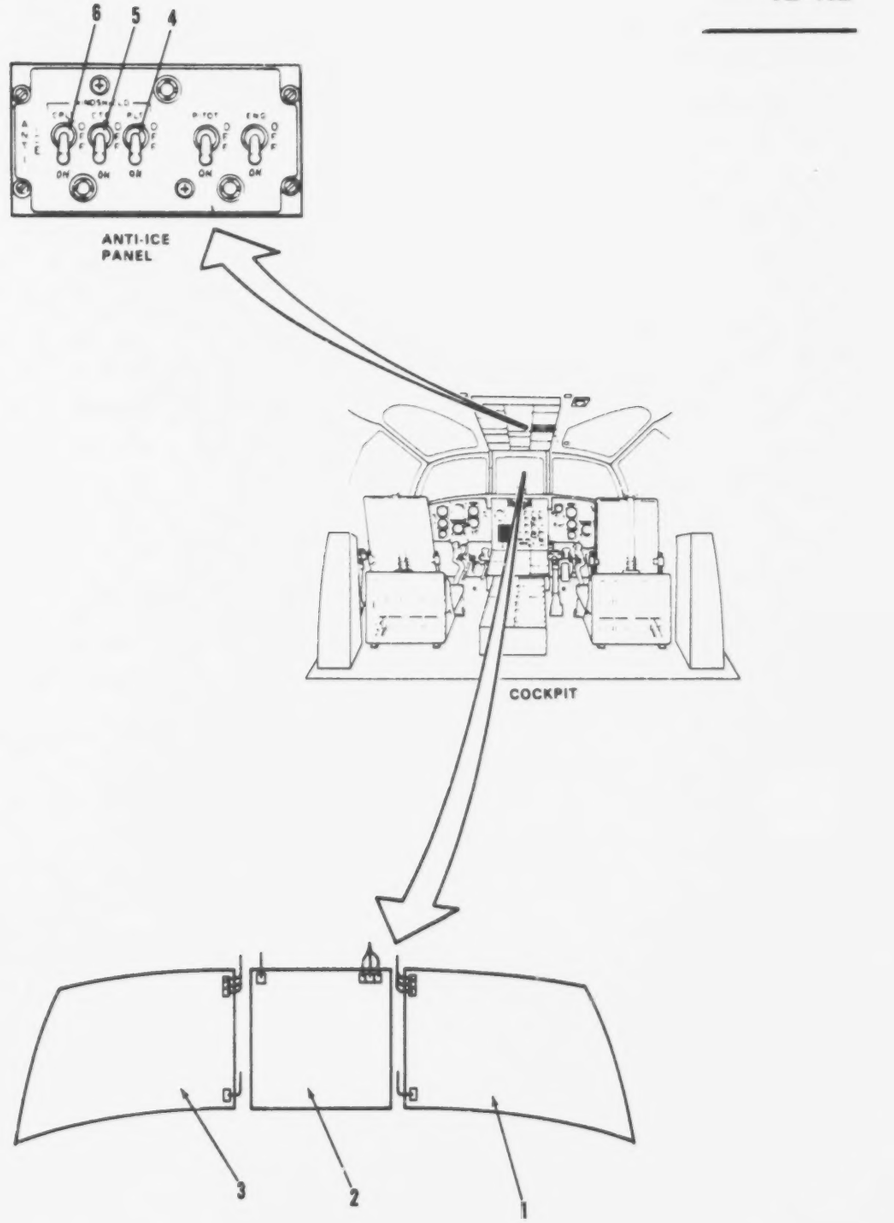
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

TASK	RESULT
1. **Check pilot's, center, and copilot's windshields (1, 2, and 3).**	If any windshield (1, 2, or 3) is damaged or discolored, replace it. If wiring to windshield terminals is loose or damaged, tighten terminals or repair or replace wire as required.
2. **Check PLT, CTR, and CPLT WINDSHIELD anti-ice switches (4, 5, 6).**	If any switch (4, 5, or 6) is loose or damaged, tighten or replace it as required.

FOLLOW-ON MAINTENANCE:

None



12-1.3 WINDSHIELD ANTI-ICING SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

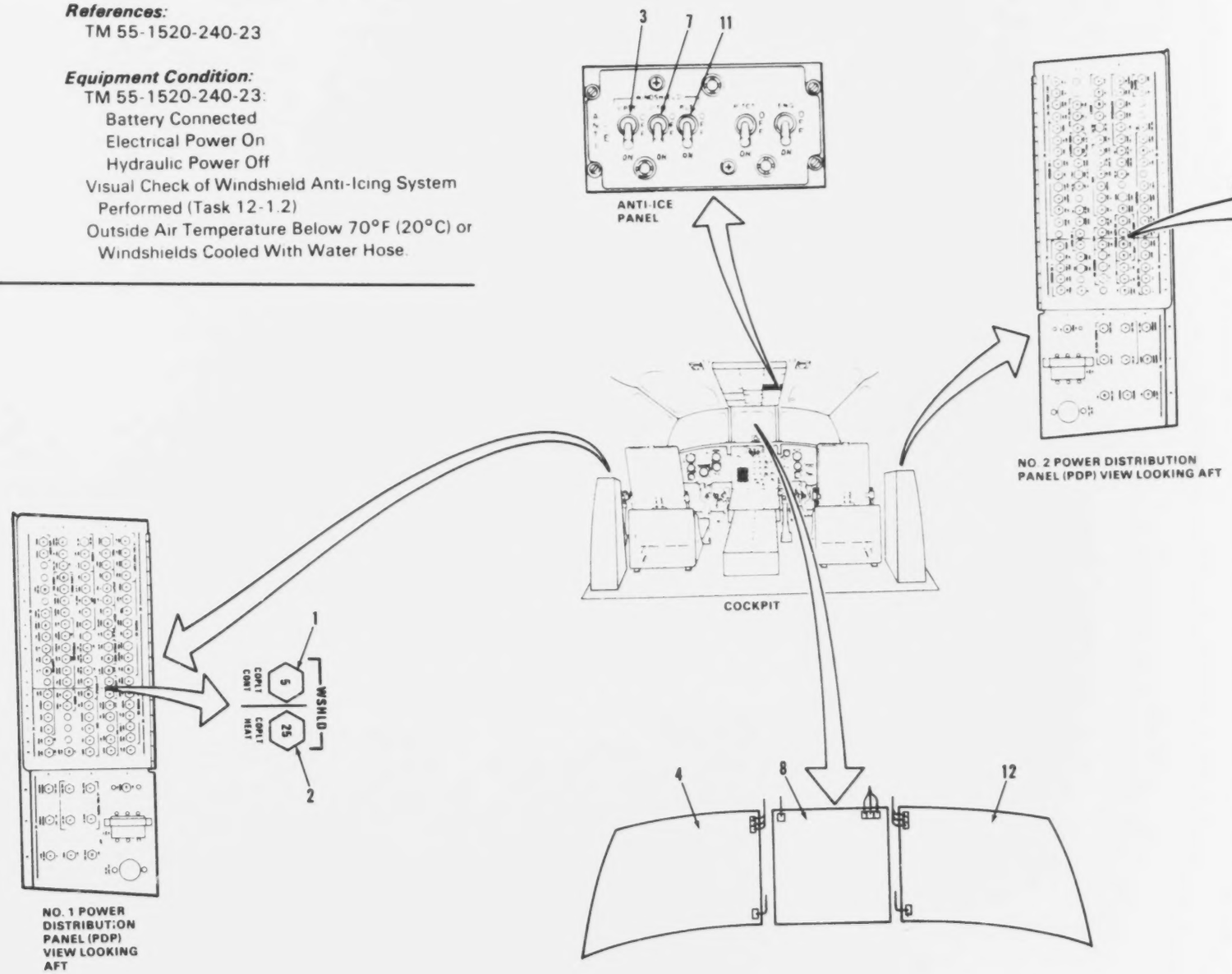
Tools:
None

Materiels:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Visual Check of Windshield Anti-Icing System Performed (Task 12-1.2)
Outside Air Temperature Below 70°F (20°C) or Windshields Cooled With Water Hose.



12-1.3 WINDSHIELD ANTI-ICING SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
CHECK COPILOTS WINDSHIELD ANTI-ICING	
1. **Check** that **COPLT WSHLD CONT and COPLT WSHLD HEAT circuit breakers (1 and 2)** are closed.	If COPLT WSHLD CONT or COPLT WSHLD HEAT circuit breaker (1 or 2) is open, close it. If COPLT WSHLD CONT circuit breaker opens again, go to task 12-1.4. If COPLT WSHLD HEAT circuit breaker opens again, go to task 12-1.5.
2. **Set CPLT WINDSHIELD anti-ice switch (3) to ON. Touch copilot's windshield (4).**	Copilot's windshield (4) shall begin to get warm and heat up before automatic heat cycling begins. If windshield does not get warm, go to task 12-1-6. If windshield temperature does not cycle replace copilot's windshield anti-icing control box.
3. **Set CPLT WINDSHIELD anti-ice switch (3) to OFF. Touch copilot's windshield (4).**	Copilot's windshield (4) shall stop heating. If it continues to heat, go to task 12-1.7.
CHECK CENTER WINDSHIELD ANTI-ICING	
4. **Check** that **CTR WSHLD ANTI-ICE CONT and CTR WSHLD ANTI-ICE HEAT circuit breakers (5 and 6)** are closed.	If CTR WSHLD ANTI-ICE CONT or CTR WSHLD ANTI-ICE HEAT circuit breaker (5 or 6) is open, close it. If CTR WSHLD ANTI-ICE CONT circuit breaker opens again, go to task 12-1.8. If CTR WSHLD ANTI-ICE HEAT circuit breaker opens again, go to task 12-1.9.
5. **Set CTR WINDSHIELD anti-ice switch (7) to ON. Touch center windshield (8).**	Center windshield (8) shall begin to get warm and heat up before automatic heat cycling begins. If windshield does not get warm, go to task 12-1.10. If windshield temperature does not cycle, replace center windshield anti-icing control box.
6. **Set CTR WINDSHIELD anti-ice switch (7) to OFF. Touch center windshield (8).**	Center windshield (8) shall stop heating. If it continues to heat, go to task 12-1.11.
CHECK PILOT'S WINDSHIELD ANTI-ICING	
7. **Check** that **PILOT WSHLD ANTI-ICE CONT AND PILOT WSHLD ANTI-ICE HEAT circuit breakers (9 and 10)** are closed.	If PILOT WSHLD ANTI-ICE CONT or PILOT WSHLD ANTI-ICE HEAT circuit breaker (9 or 10) is open, close it. If PILOT WSHLD ANTI-ICE CONT circuit breaker opens again, go to task 12-1.12. If PILOT WSHLD ANTI-ICE HEAT circuit breaker opens again, go to task 12-1.13.
8. **Set PLT WINDSHIELD anti-ice switch (11) to ON. Touch pilot's windshield (12).**	Pilot's windshield (12) shall begin to get warm and heat up before automatic heat cycling begins. If windshield does not get warm, go to task 12-2.14. If windshield temperature does not cycle, replace pilot's windshield anti-icing control box.
9. **Set PLT WINDSHIELD anti-ice switch (11) to OFF. Touch pilot's windshield (12).**	Pilot's windshield (12) shall stop heating. If it continues to heat, go to task 12-1.15.

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Electrical Power Off
Battery Disconnected

END OF TASK

12-1.4 COPLT WSHLD CONT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

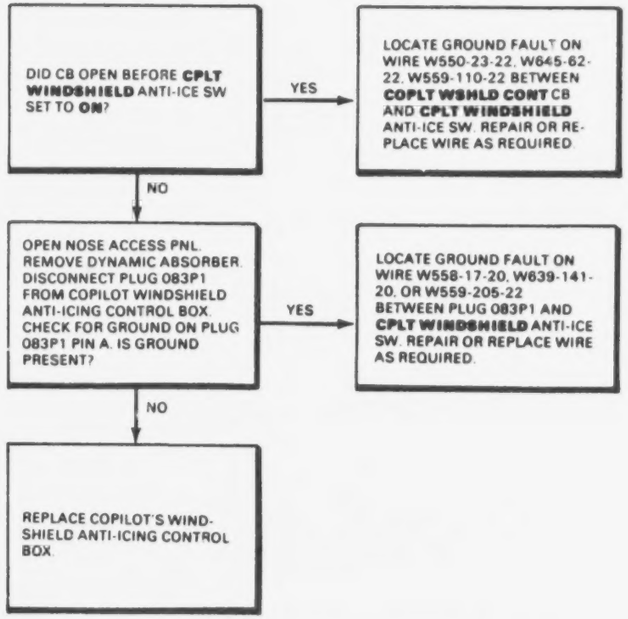
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

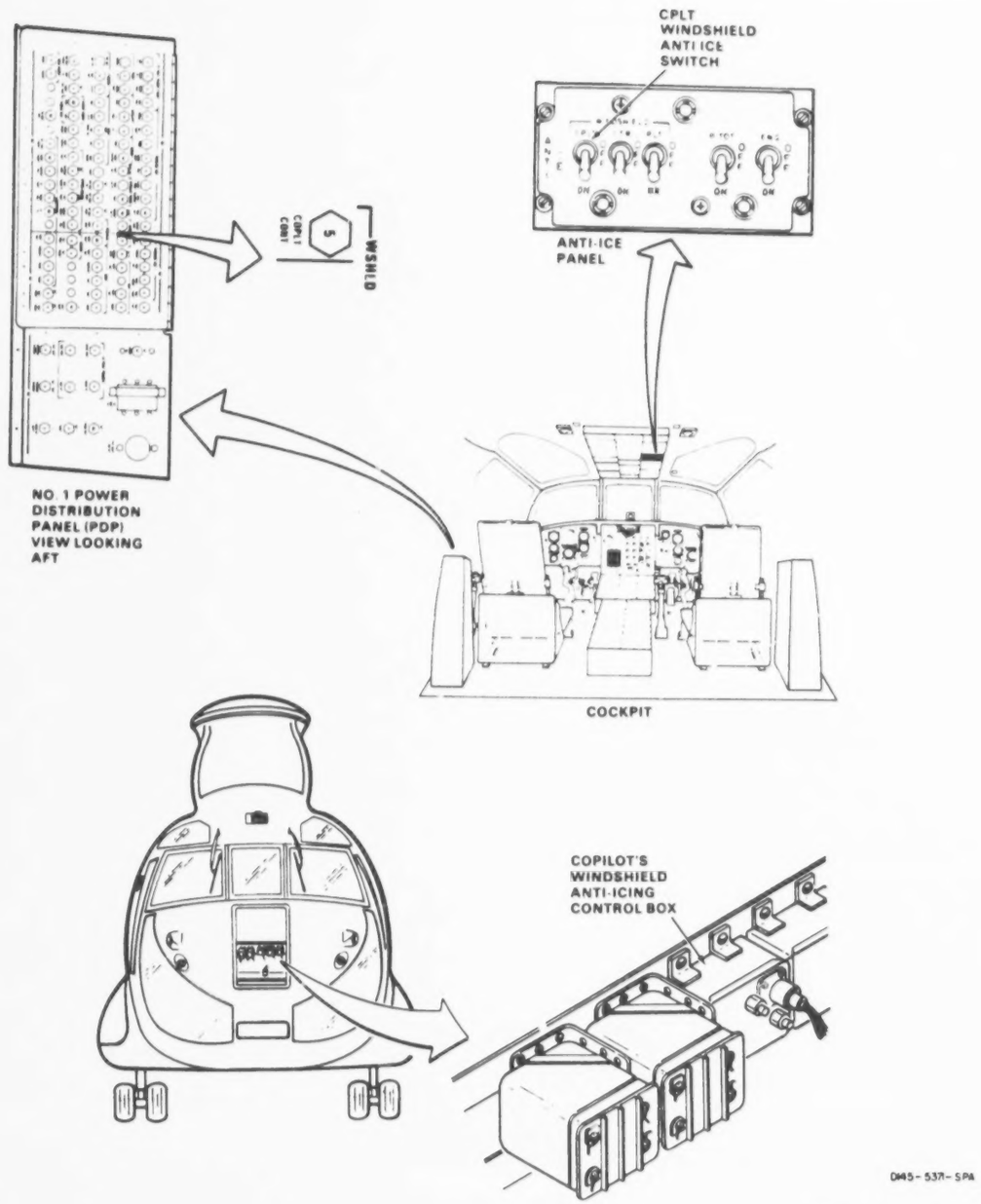
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DID CB OPEN BEFORE **CPLT WINDSHIELD** ANTI-ICE SW SET TO **ON**?
YES
LOCATE GROUND FAULT ON WIRE W550-23-22, W645-62-22, W559-110-22 BETWEEN **COPLT WSHLD CONT** CB AND **CPLT WINDSHIELD** ANTI-ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN NOSE ACCESS PNL. REMOVE DYNAMIC ABSORBER. DISCONNECT PLUG 083P1 FROM COPILOT WINDSHIELD ANTI-ICING CONTROL BOX. CHECK FOR GROUND ON PLUG 083P1 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W558-17-20, W639-141-20, OR W559-205-22 BETWEEN PLUG 083P1 AND **CPLT WINDSHIELD** ANTI-ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE COPILOT'S WINDSHIELD ANTI-ICING CONTROL BOX.



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END OF TASK

12-1.5 COPLT WSHLD HEAT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

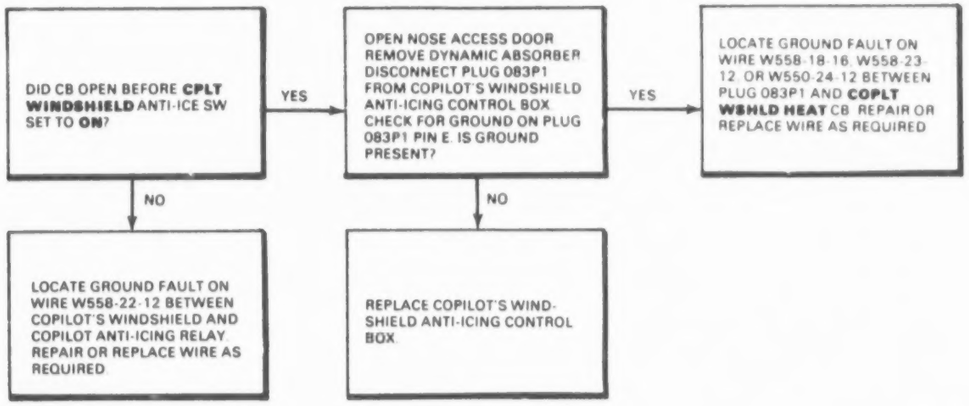
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

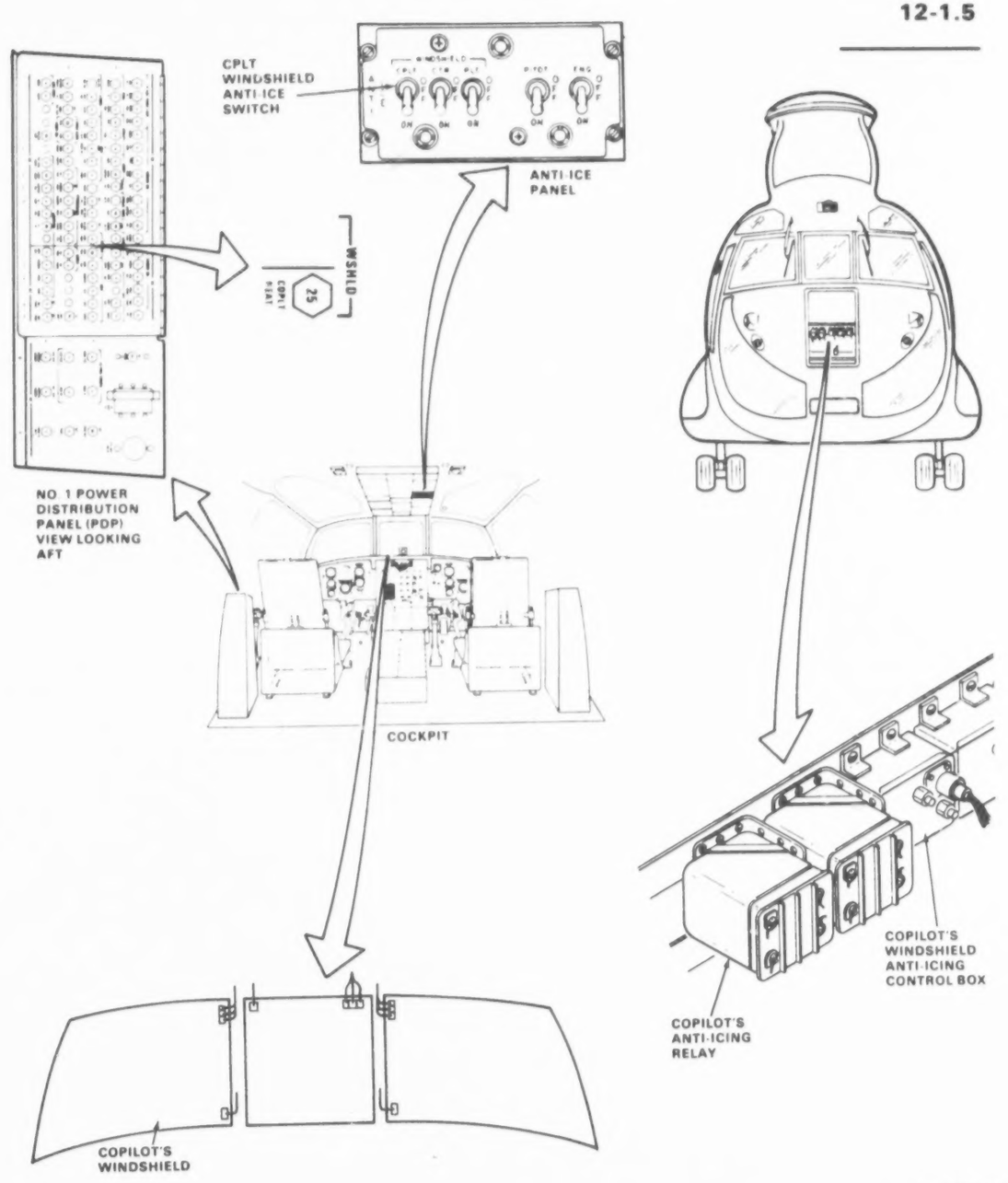
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DID CB OPEN BEFORE **CPLT WINDSHIELD** ANTI-ICE SW SET TO **ON**?
YES
OPEN NOSE ACCESS DOOR REMOVE DYNAMIC ABSORBER DISCONNECT PLUG 083P1 FROM COPILOT'S WINDSHIELD ANTI-ICING CONTROL BOX CHECK FOR GROUND ON PLUG 083P1 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W558-18-16, W558-23-12, OR W550-24-12 BETWEEN PLUG 083P1 AND **COPLT WSHLD HEAT** CB. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE GROUND FAULT ON WIRE W558-22-12 BETWEEN COPILOT'S WINDSHIELD AND COPILOT ANTI-ICING RELAY. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE COPILOT'S WINDSHIELD ANTI-ICING CONTROL BOX.



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END OF TASK

12-1.6 COPILOT'S WINDSHIELD DOES NOT GET WARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

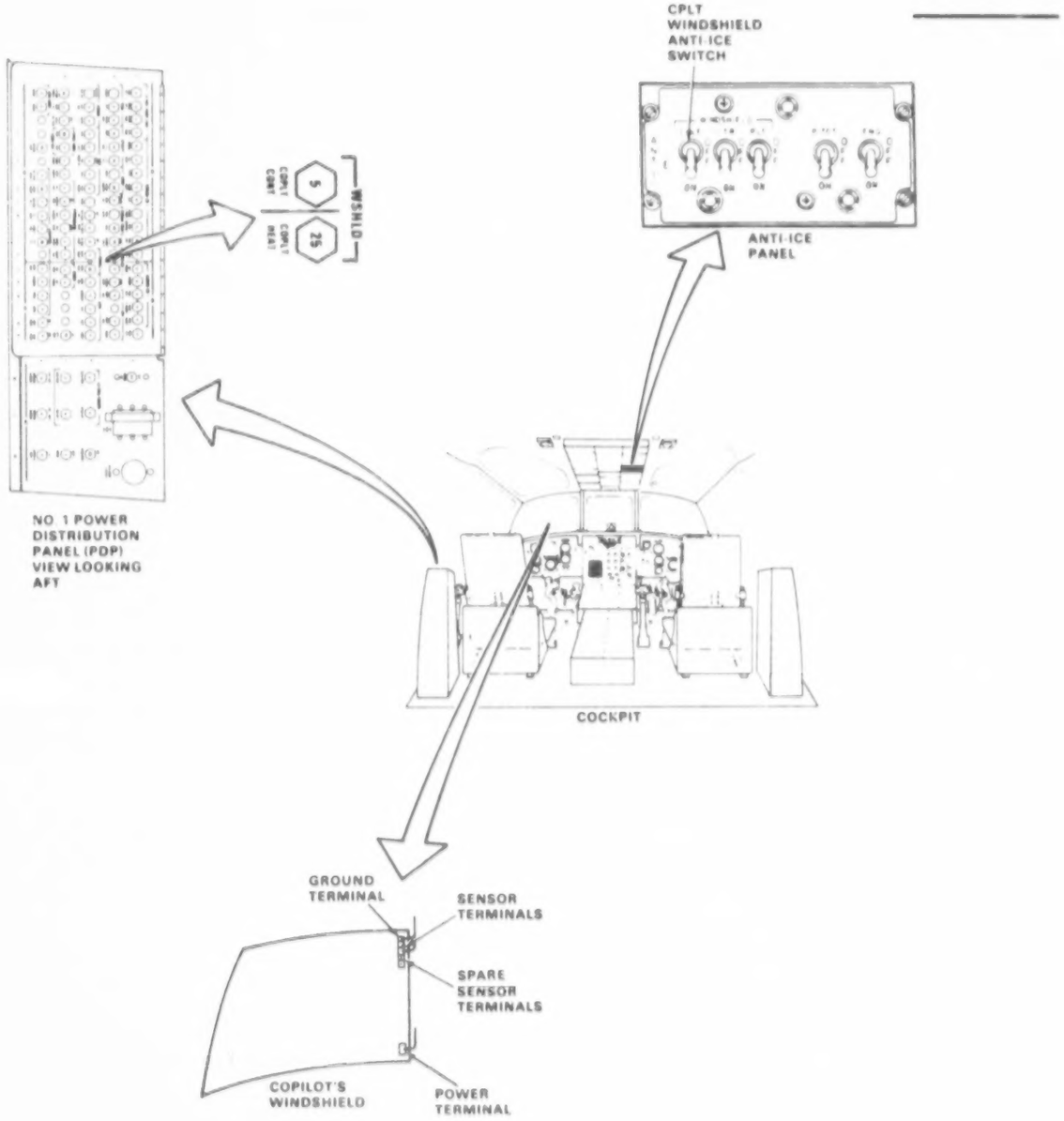
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

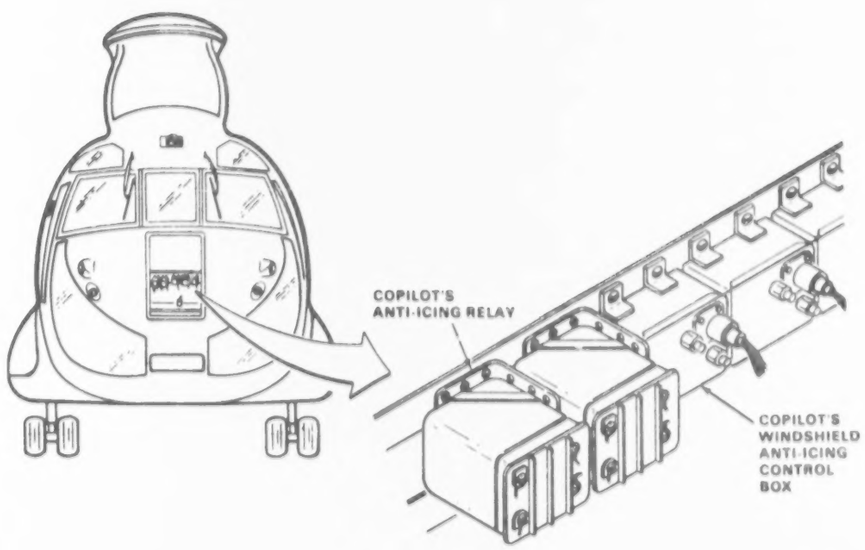
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





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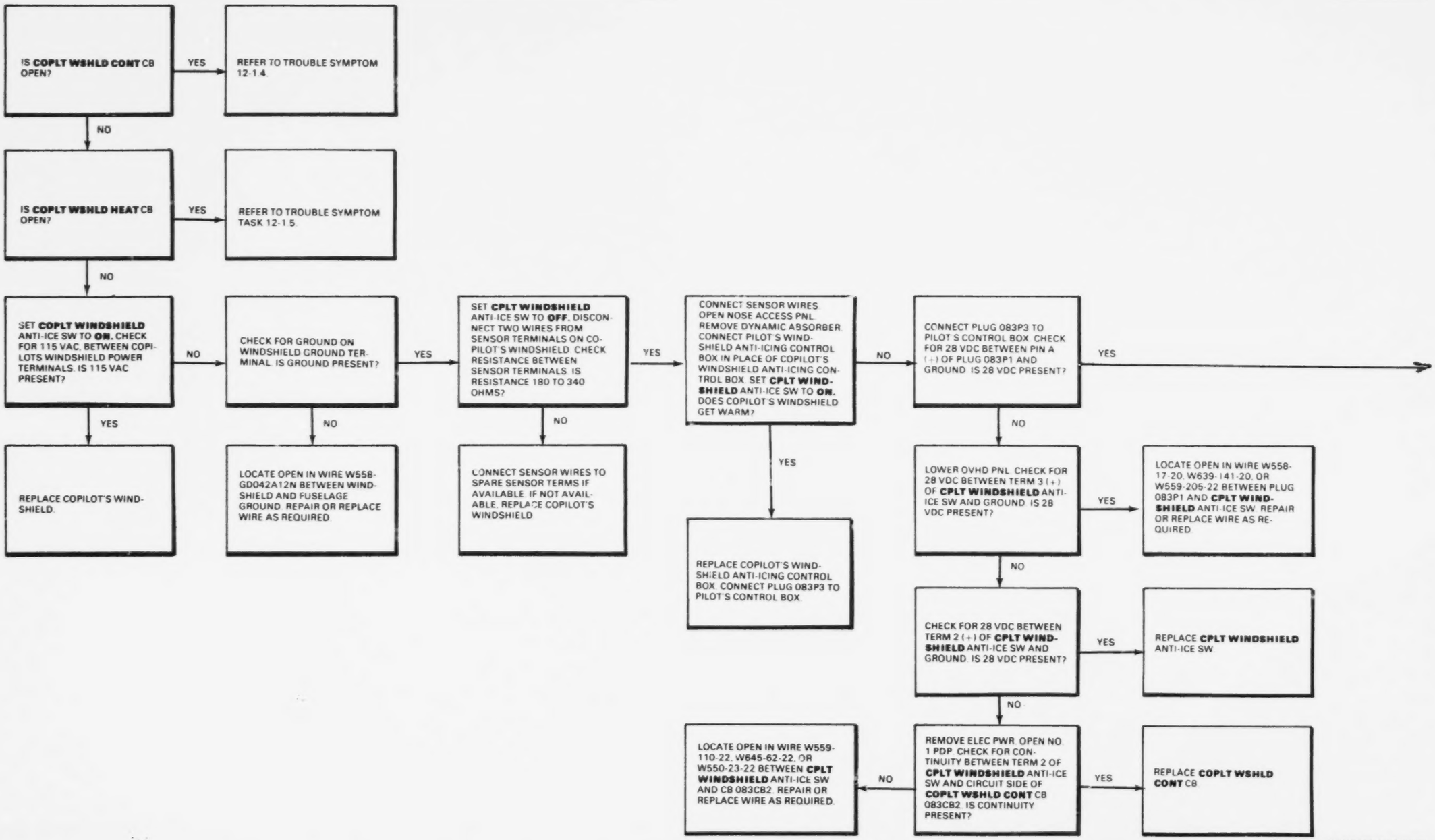
12-1.6 COPILOT'S WINDSHIELD DOES NOT GET WARM (Continued)


IS COPLT WSHLD CONT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM 12-1.4.
NO
IS COPLT WSHLD HEAT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-1.5.
NO
SET COPLT WINDSHIELD ANTI-ICE SW TO ON. CHECK FOR 115 VAC BETWEEN COPILOTS WINDSHIELD POWER TERMINALS. IS 115 VAC PRESENT?
NO
YES
REPLACE COPILOT'S WINDSHIELD.
CHECK FOR GROUND ON WINDSHIELD GROUND TERMINAL. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-GD042A12N BETWEEN WINDSHIELD AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
SET CPLT WINDSHIELD ANTI-ICE SW TO OFF. DISCONNECT TWO WIRES FROM SENSOR TERMINALS ON COPILOT'S WINDSHIELD. CHECK RESISTANCE BETWEEN SENSOR TERMINALS. IS RESISTANCE 180 TO 340 OHMS?
YES
NO
CONNECT SENSOR WIRES TO SPARE SENSOR TERMS IF AVAILABLE. IF NOT AVAILABLE, REPLACE COPILOT'S WINDSHIELD.
CONNECT SENSOR WIRES. OPEN NOSE ACCESS PNL. REMOVE DYNAMIC ABSORBER. CONNECT PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX IN PLACE OF COPILOT'S WINDSHIELD ANTI-ICING CONTROL BOX. SET CPLT WINDSHIELD ANTI-ICE SW TO ON. DOES COPILOT'S WINDSHIELD GET WARM?
YES
NO
REPLACE COPILOT'S WINDSHIELD ANTI-ICING CONTROL BOX. CONNECT PLUG 083P3 TO PILOT'S CONTROL BOX.
CONNECT PLUG 083P3 TO PILOT'S CONTROL BOX. CHECK FOR 28 VDC BETWEEN PIN A (+) OF PLUG 083P1 AND GROUND. IS 28 VDC PRESENT?
YES
NO
LOWER OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 3 (+) OF CPLT WINDSHIELD ANTI-ICE SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W558-17-20, W639-141-20, OR W559-205-22 BETWEEN PLUG 083P1 AND CPLT WINDSHIELD ANTI-ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28 VDC BETWEEN TERM 2 (+) OF CPLT WINDSHIELD ANTI-ICE SW AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE CPLT WINDSHIELD ANTI-ICE SW.
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN TERM 2 OF CPLT WINDSHIELD ANTI-ICE SW AND CIRCUIT SIDE OF COPLT WSHLD CONT CB 083CB2. IS CONTINUITY PRESENT?
NO
YES
LOCATE OPEN IN WIRE W559-110-22, W645-62-22, OR W550-23-22 BETWEEN CPLT WINDSHIELD ANTI-ICE SW AND CB 083CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE COPLT WSHLD CONT CB

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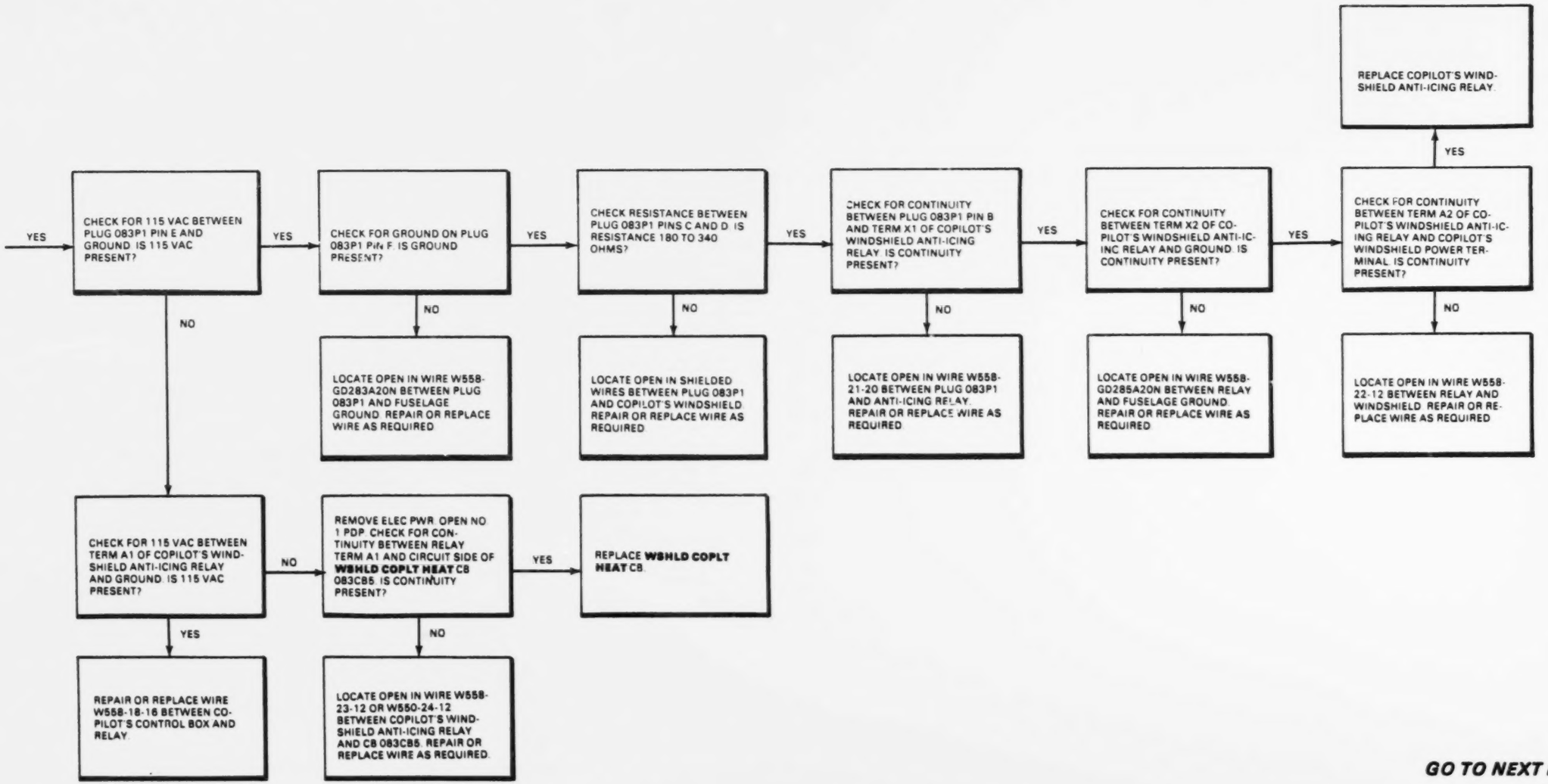
12-1.6 COPILOT'S WINDSHIELD DOES NOT GET WARM (Continued)


CHECK FOR 115 VAC BETWEEN PLUG 083P1 PIN E AND GROUND. IS 115 VAC PRESENT?
YES
NO
CHECK FOR GROUND ON PLUG 083P1 PIN F. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-GD283A20N BETWEEN PLUG 083P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK RESISTANCE BETWEEN PLUG 083P1 PINS C AND D. IS RESISTANCE 180 TO 340 OHMS?
YES
NO
LOCATE OPEN IN SHIELDED WIRES BETWEEN PLUG 083P1 AND COPILOT'S WINDSHIELD. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 083P1 PIN B AND TERM X1 OF COPILOT'S WINDSHIELD ANTI-ICING RELAY. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-21-20 BETWEEN PLUG 083P1 AND ANTI-ICING RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN TERM X2 OF COPILOT'S WINDSHIELD ANTI-ICING RELAY AND GROUND. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-GD285A20N BETWEEN RELAY AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN TERM A2 OF COPILOT'S WINDSHIELD ANTI-ICING RELAY AND COPILOT'S WINDSHIELD POWER TERMINAL. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-22-12 BETWEEN RELAY AND WINDSHIELD. REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE COPILOT'S WINDSHIELD ANTI-ICING RELAY.
CHECK FOR 115 VAC BETWEEN TERM A1 OF COPILOT'S WINDSHIELD ANTI-ICING RELAY AND GROUND. IS 115 VAC PRESENT?
YES
REPAIR OR REPLACE WIRE W558-18-16 BETWEEN COPILOT'S CONTROL BOX AND RELAY.
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN RELAY TERM A1 AND CIRCUIT SIDE OF **WSHLD COPLT HEAT** CB 083CB5. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W558-23-12 OR W550-24-12 BETWEEN COPILOT'S WINDSHIELD ANTI-ICING RELAY AND CB 083CB5. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE **WSHLD COPLT HEAT** CB.

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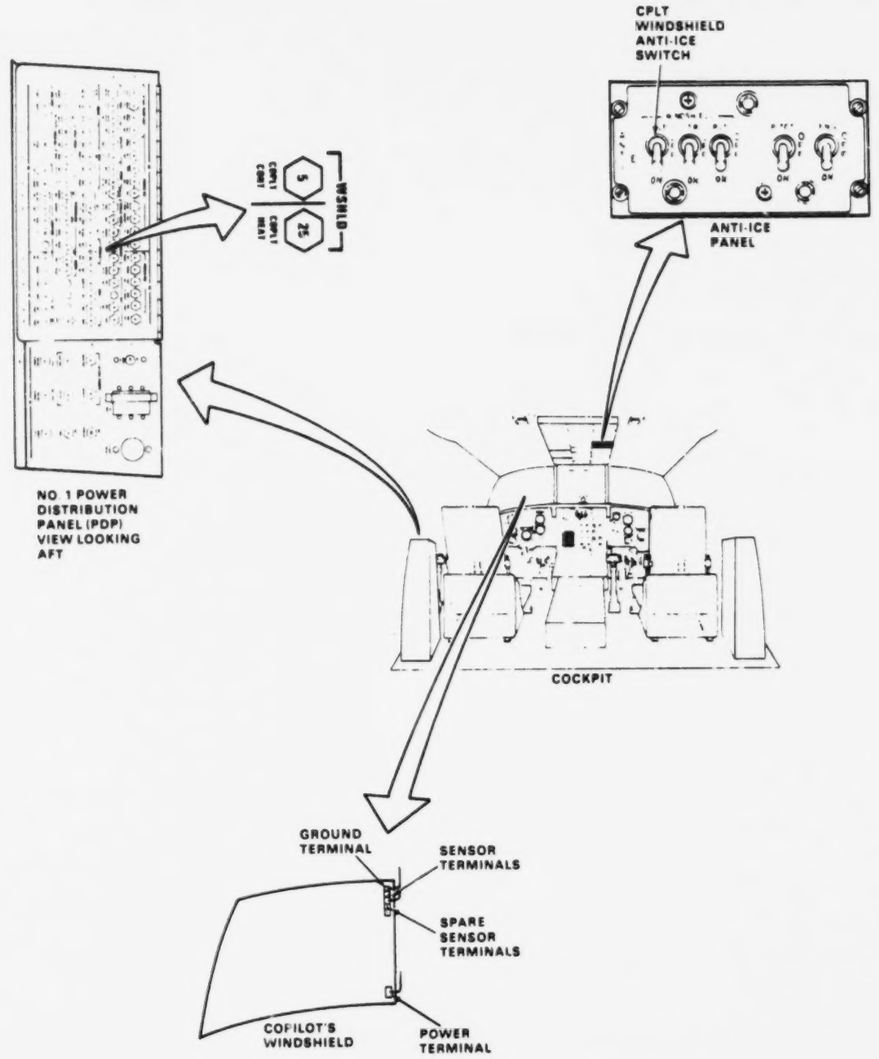
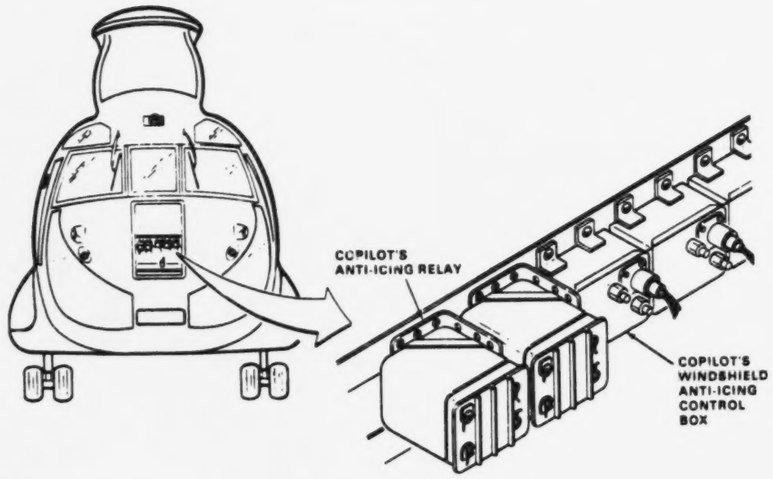
12-1.6 COPILOT'S WINDSHIELD DOES NOT GET WARM (Continued)





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END OF TASK

12-1.7 COPILOT'S WINDSHIELD CONTINUES TO HEAT WHEN CPLT WINDSHIELD ANTI-ICE SWITCH IS AT OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

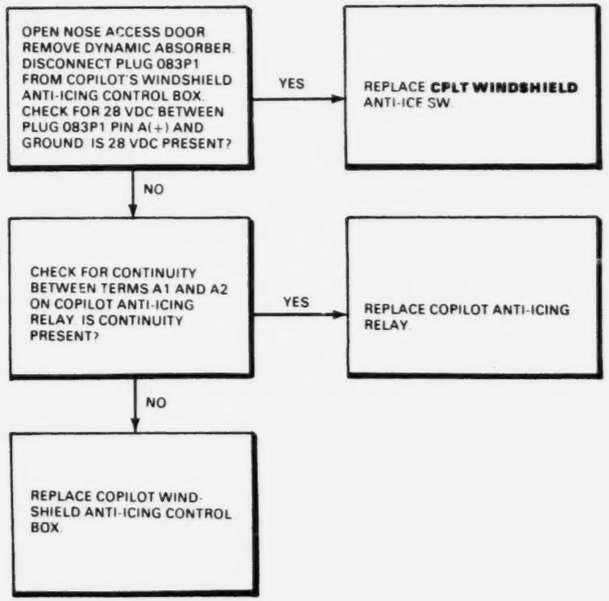
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

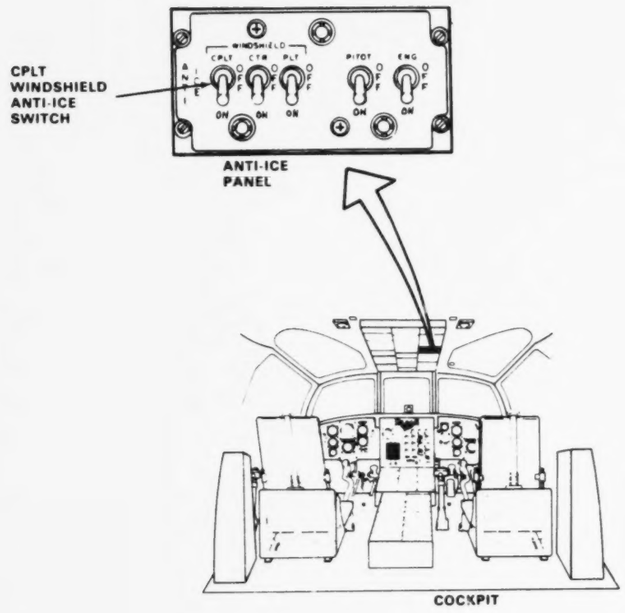
Materials:
None

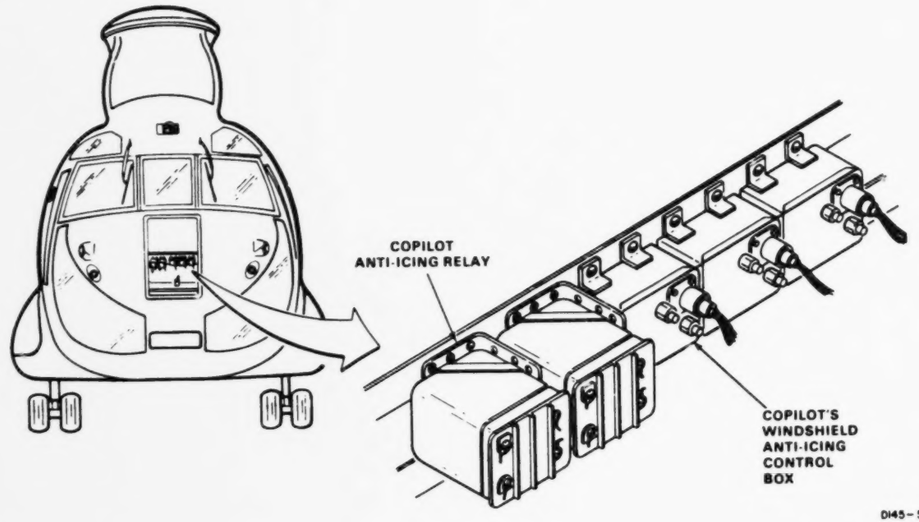
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


OPEN NOSE ACCESS DOOR REMOVE DYNAMIC ABSORBER. DISCONNECT PLUG 083P1 FROM COPILOT'S WINDSHIELD ANTI-ICING CONTROL BOX. CHECK FOR 28 VDC BETWEEN PLUG 083P1 PIN A(+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE CPLT WINDSHIELD ANTI-ICE SW.
NO
CHECK FOR CONTINUITY BETWEEN TERMS A1 AND A2 ON COPILOT ANTI-ICING RELAY. IS CONTINUITY PRESENT?
YES
REPLACE COPILOT ANTI-ICING RELAY.
NO
REPLACE COPILOT WIND-SHIELD ANTI-ICING CONTROL BOX.





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END OF TASK

12-1.8 CTR WSHLD ANTI-ICE CONT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

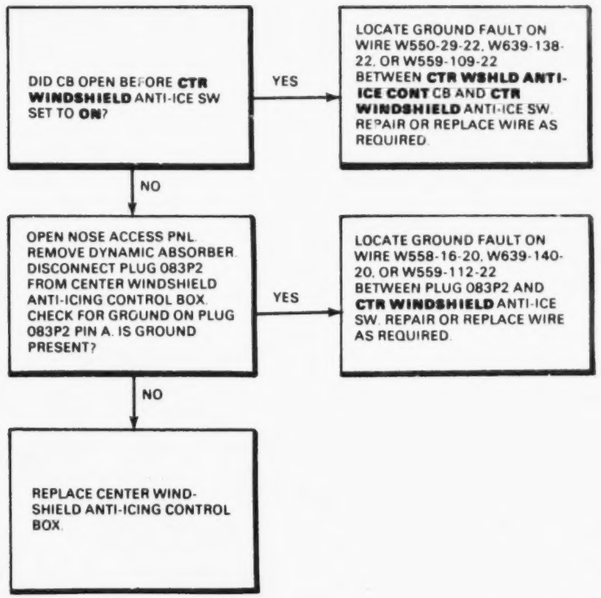
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

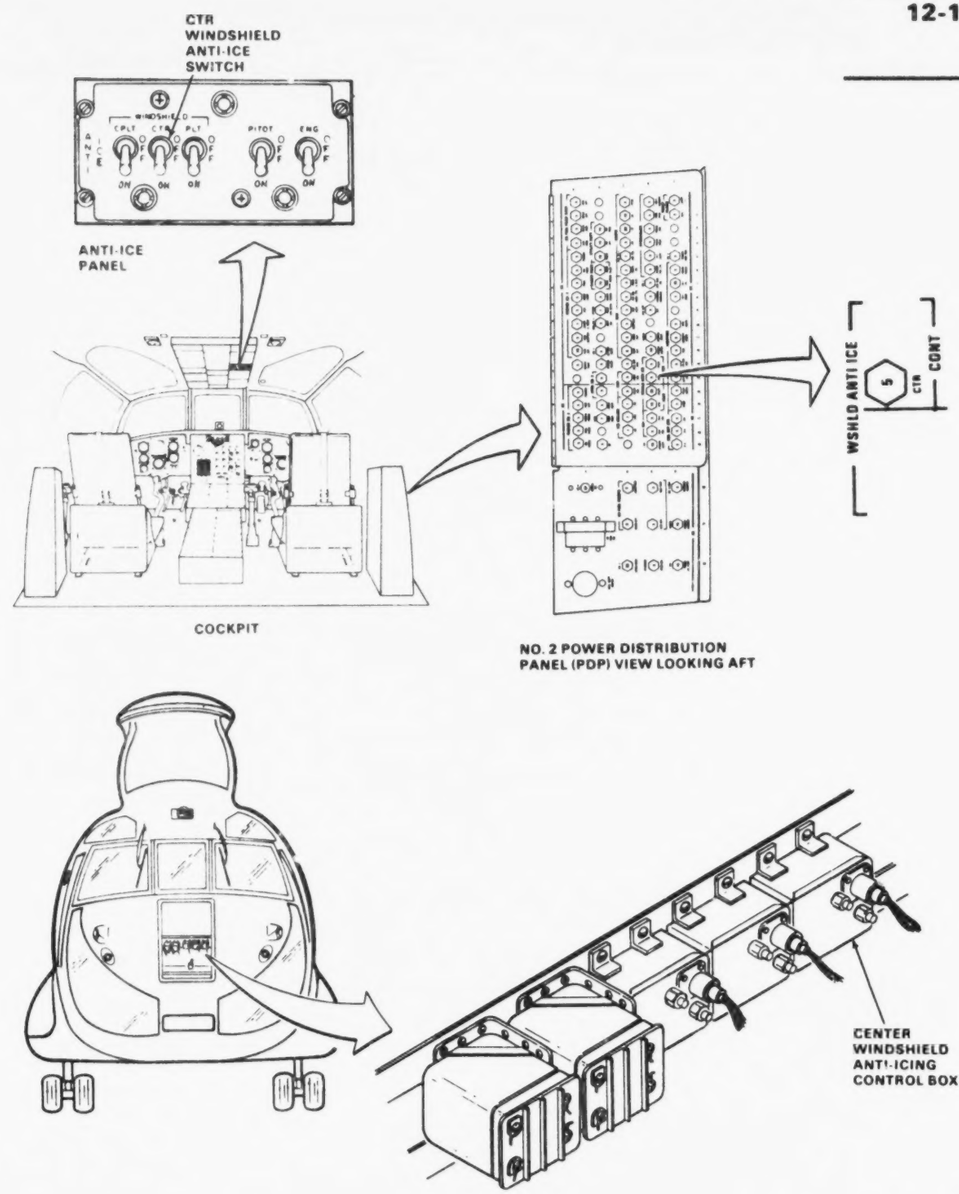
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DID CB OPEN BEFORE CTR WINDSHIELD ANTI-ICE SW SET TO ON?
YES
LOCATE GROUND FAULT ON WIRE W550-29-22, W639-138-22, OR W559-109-22 BETWEEN CTR WSHLD ANTI-ICE CONT CB AND CTR WINDSHIELD ANTI-ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN NOSE ACCESS PNL. REMOVE DYNAMIC ABSORBER. DISCONNECT PLUG 083P2 FROM CENTER WINDSHIELD ANTI-ICING CONTROL BOX. CHECK FOR GROUND ON PLUG 083P2 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W558-16-20, W639-140-20, OR W559-112-22 BETWEEN PLUG 083P2 AND CTR WINDSHIELD ANTI-ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CENTER WINDSHIELD ANTI-ICING CONTROL BOX.



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END OF TASK

12-1.9 CTR WSHLD ANTI ICE HEAT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

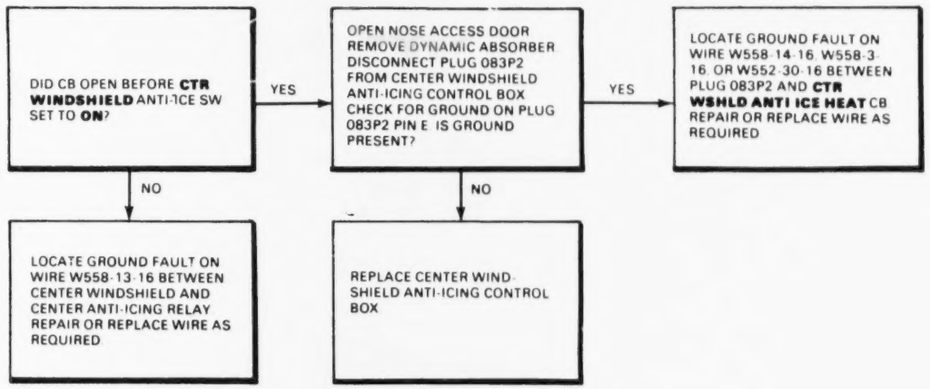
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

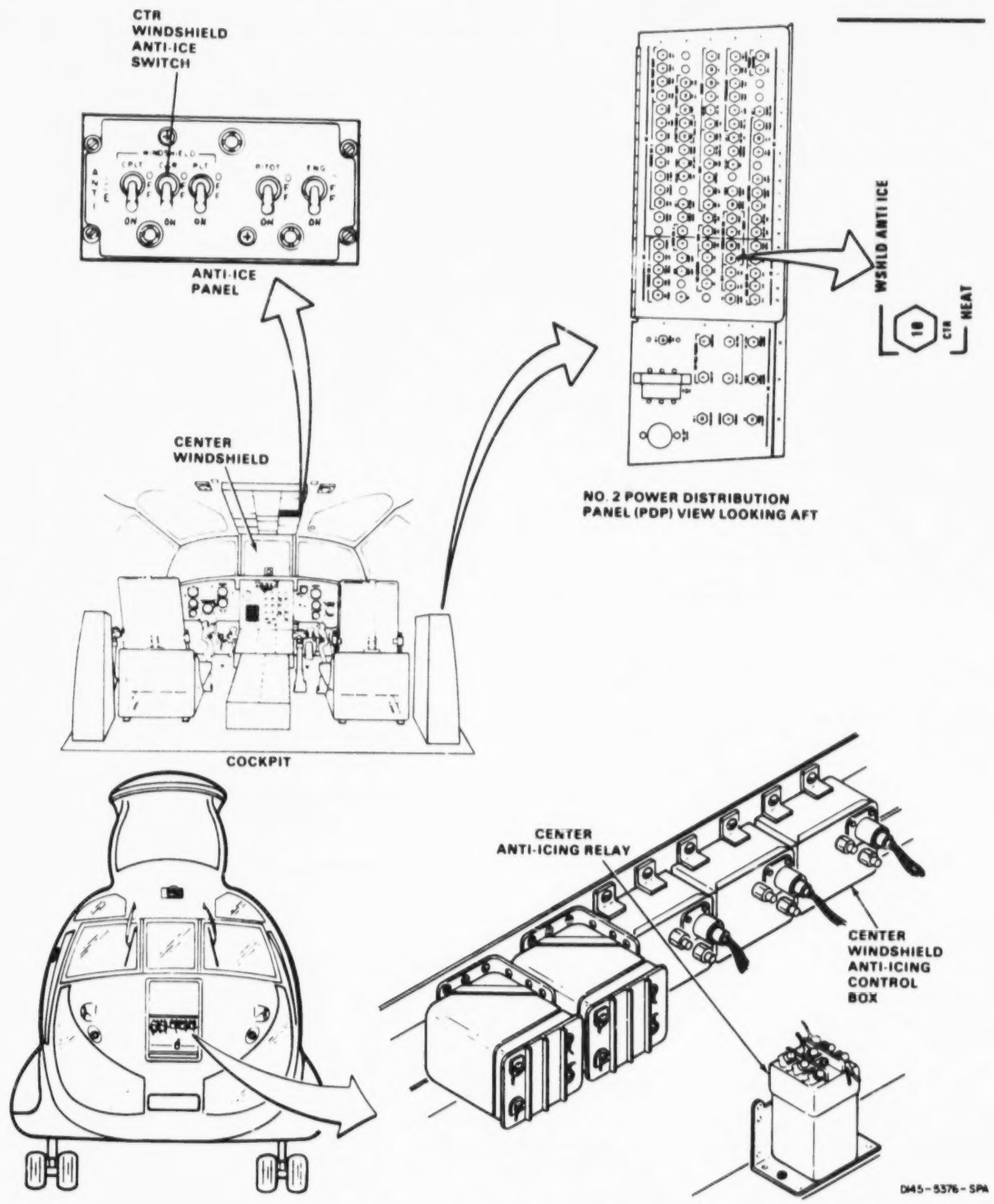
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DID CB OPEN BEFORE **CTR WINDSHIELD** ANTI-ICE SW SET TO **ON**?
YES
OPEN NOSE ACCESS DOOR REMOVE DYNAMIC ABSORBER DISCONNECT PLUG 083P2 FROM CENTER WINDSHIELD ANTI-ICING CONTROL BOX CHECK FOR GROUND ON PLUG 083P2 PIN E IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W558-14-16, W558-3-16, OR W552-30-16 BETWEEN PLUG 083P2 AND **CTR WSHLD ANTI ICE HEAT** CB. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE GROUND FAULT ON WIRE W558-13-16 BETWEEN CENTER WINDSHIELD AND CENTER ANTI-ICING RELAY REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE CENTER WINDSHIELD ANTI-ICING CONTROL BOX



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END OF TASK

12-1.10 CENTER WINDSHIELD DOES NOT GET WARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

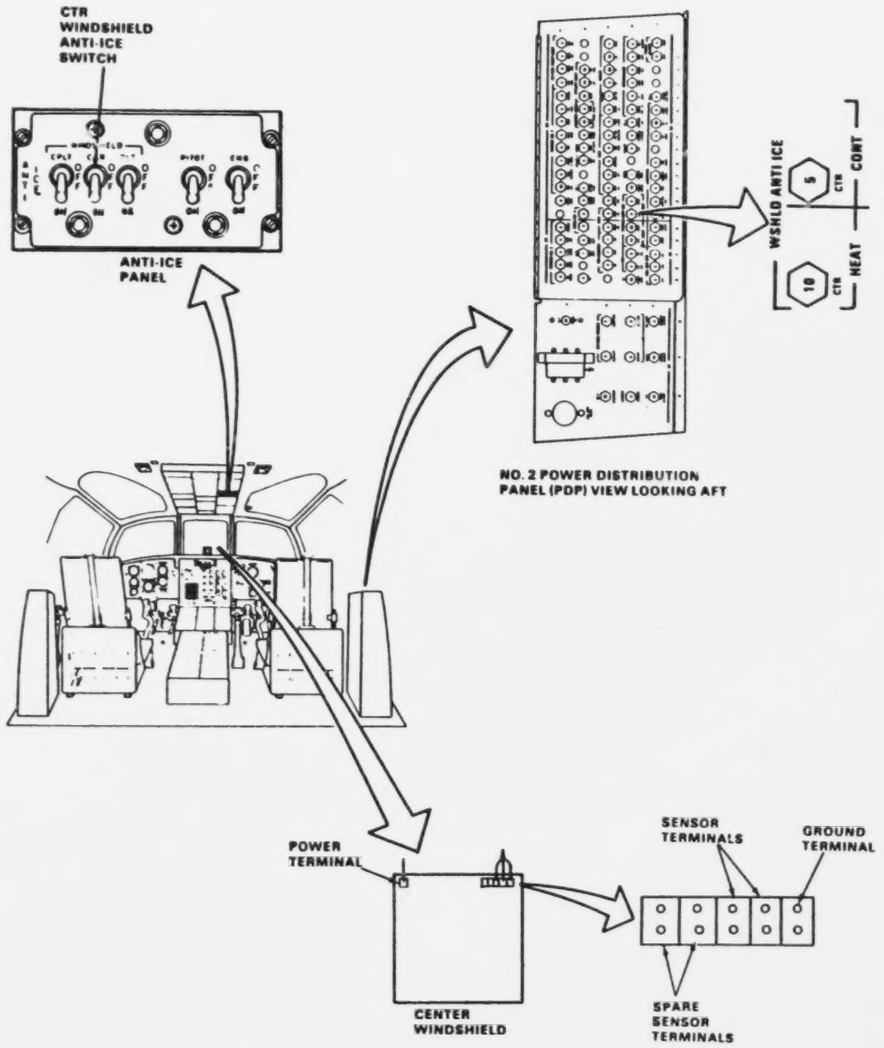
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

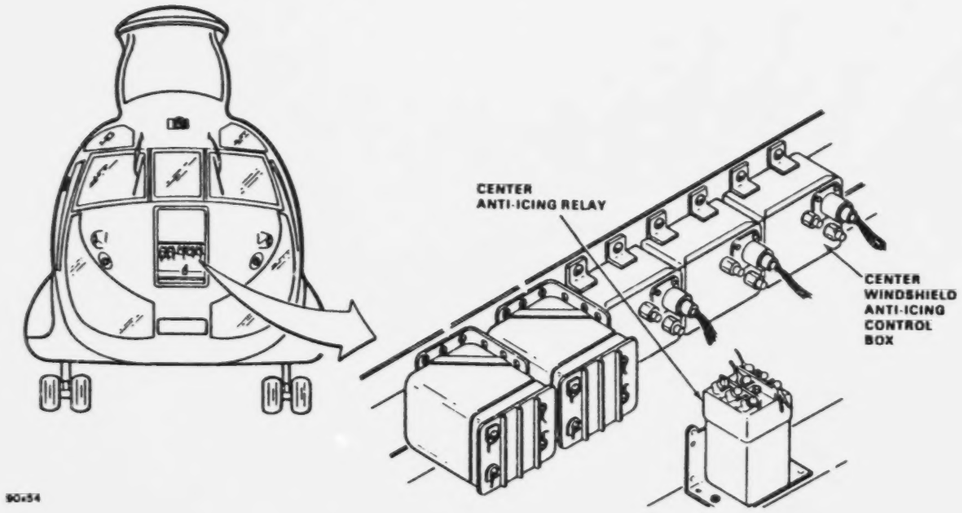
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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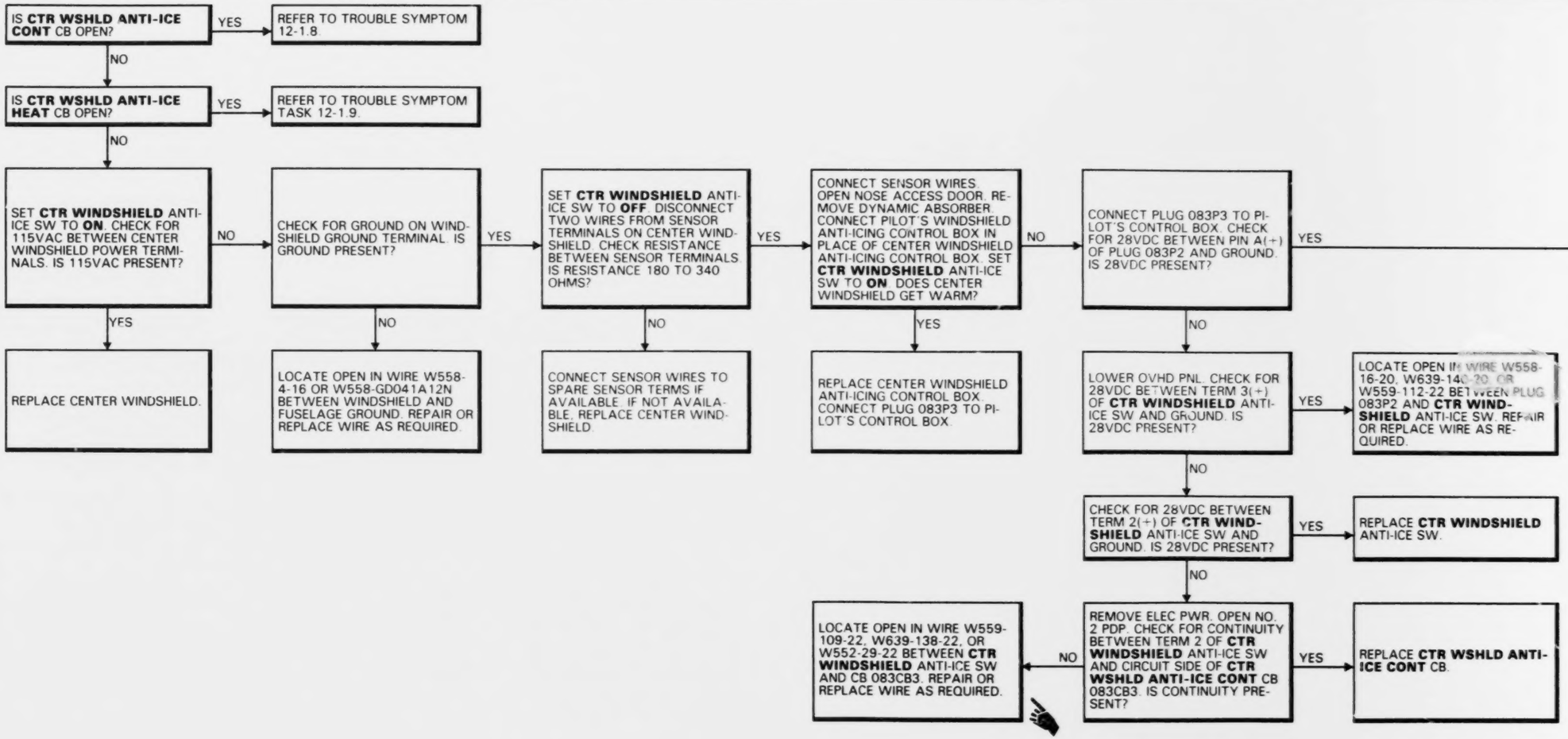
12-1.10 CENTER WINDSHIELD DOES NOT GET WARM (Continued)


IS **CTR WSHLD ANTI-ICE CONT** CB OPEN?
YES
REFER TO TROUBLE SYMPTOM 12-1.8.
NO
IS **CTR WSHLD ANTI-ICE HEAT** CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-1.9.
NO
SET **CTR WINDSHIELD** ANTI-ICE SW TO **ON**. CHECK FOR 115VAC BETWEEN CENTER WINDSHIELD POWER TERMINALS. IS 115VAC PRESENT?
NO
CHECK FOR GROUND ON WINDSHIELD GROUND TERMINAL. IS GROUND PRESENT?
YES
SET **CTR WINDSHIELD** ANTI-ICE SW TO **OFF**. DISCONNECT TWO WIRES FROM SENSOR TERMINALS ON CENTER WINDSHIELD. CHECK RESISTANCE BETWEEN SENSOR TERMINALS. IS RESISTANCE 180 TO 340 OHMS?
YES
CONNECT SENSOR WIRES. OPEN NOSE ACCESS DOOR. REMOVE DYNAMIC ABSORBER. CONNECT PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX IN PLACE OF CENTER WINDSHIELD ANTI-ICING CONTROL BOX. SET **CTR WINDSHIELD** ANTI-ICE SW TO **ON**. DOES CENTER WINDSHIELD GET WARM?
NO
CONNECT PLUG 083P3 TO PILOT'S CONTROL BOX. CHECK FOR 28VDC BETWEEN PIN A(+) OF PLUG 083P2 AND GROUND. IS 28VDC PRESENT?
YES
YES
REPLACE CENTER WINDSHIELD.
NO
LOCATE OPEN IN WIRE W558-4-16 OR W558-GD041A12N BETWEEN WINDSHIELD AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CONNECT SENSOR WIRES TO SPARE SENSOR TERMS IF AVAILABLE. IF NOT AVAILABLE, REPLACE CENTER WINDSHIELD.
YES
REPLACE CENTER WINDSHIELD ANTI-ICING CONTROL BOX. CONNECT PLUG 083P3 TO PILOT'S CONTROL BOX.
NO
LOWER OVHD PNL. CHECK FOR 28VDC BETWEEN TERM 3(+) OF **CTR WINDSHIELD** ANTI-ICE SW AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W558-16-20, W639-140-20, OR W559-112-22 BETWEEN PLUG 083P2 AND **CTR WINDSHIELD** ANTI-ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28VDC BETWEEN TERM 2(+) OF **CTR WINDSHIELD** ANTI-ICE SW AND GROUND. IS 28VDC PRESENT?
YES
REPLACE **CTR WINDSHIELD** ANTI-ICE SW.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. CHECK FOR CONTINUITY BETWEEN TERM 2 OF **CTR WINDSHIELD** ANTI-ICE SW AND CIRCUIT SIDE OF **CTR WSHLD ANTI-ICE CONT** CB 083CB3. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W559-109-22, W639-138-22, OR W552-29-22 BETWEEN **CTR WINDSHIELD** ANTI-ICE SW AND CB 083CB3. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE **CTR WSHLD ANTI-ICE CONT** CB.

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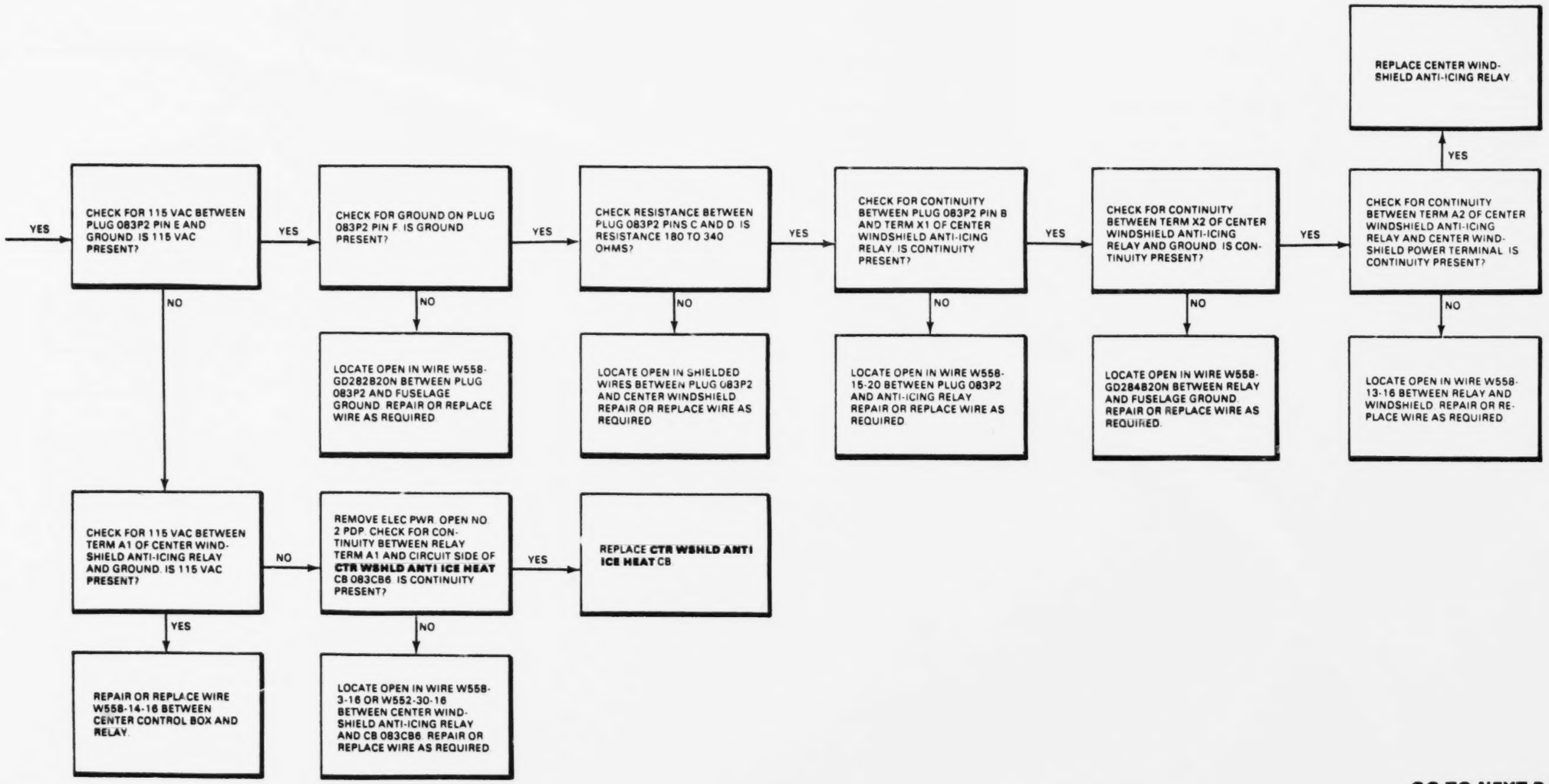
12-1.10 CENTER WINDSHIELD DOES NOT GET WARM (Continued)


YES
CHECK FOR 115 VAC BETWEEN PLUG 083P2 PIN E AND GROUND. IS 115 VAC PRESENT?
YES
CHECK FOR GROUND ON PLUG 083P2 PIN F. IS GROUND PRESENT?
YES
CHECK RESISTANCE BETWEEN PLUG 083P2 PINS C AND D. IS RESISTANCE 180 TO 340 OHMS?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 083P2 PIN B AND TERM X1 OF CENTER WINDSHIELD ANTI-ICING RELAY. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN TERM X2 OF CENTER WINDSHIELD ANTI-ICING RELAY AND GROUND. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN TERM A2 OF CENTER WINDSHIELD ANTI-ICING RELAY AND CENTER WINDSHIELD POWER TERMINAL. IS CONTINUITY PRESENT?
YES
REPLACE CENTER WINDSHIELD ANTI-ICING RELAY
NO
LOCATE OPEN IN WIRE W558-GD282B20N BETWEEN PLUG 083P2 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN SHIELDED WIRES BETWEEN PLUG 083P2 AND CENTER WINDSHIELD. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W558-15-20 BETWEEN PLUG 083P2 AND ANTI-ICING RELAY. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W558-GD284B20N BETWEEN RELAY AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W558-13-16 BETWEEN RELAY AND WINDSHIELD. REPAIR OR REPLACE WIRE AS REQUIRED
CHECK FOR 115 VAC BETWEEN TERM A1 OF CENTER WINDSHIELD ANTI-ICING RELAY AND GROUND. IS 115 VAC PRESENT?
NO
REMOVE ELEC PWR. OPEN NO 2 PDP. CHECK FOR CONTINUITY BETWEEN RELAY TERM A1 AND CIRCUIT SIDE OF CTR WSHLD ANTI ICE HEAT CB 083CB6. IS CONTINUITY PRESENT?
YES
REPLACE CTR WSHLD ANTI ICE HEAT CB
YES
REPAIR OR REPLACE WIRE W558-14-16 BETWEEN CENTER CONTROL BOX AND RELAY.
NO
LOCATE OPEN IN WIRE W558-3-16 OR W552-30-16 BETWEEN CENTER WINDSHIELD ANTI-ICING RELAY AND CB 083CB6. REPAIR OR REPLACE WIRE AS REQUIRED

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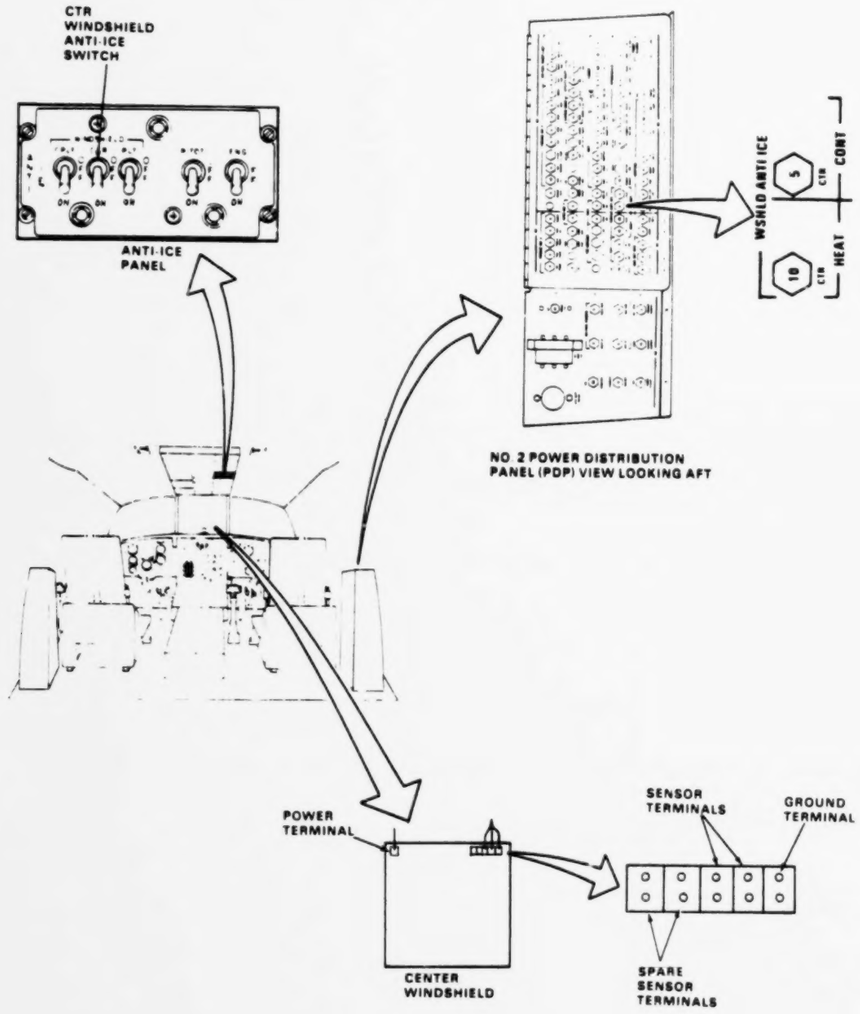
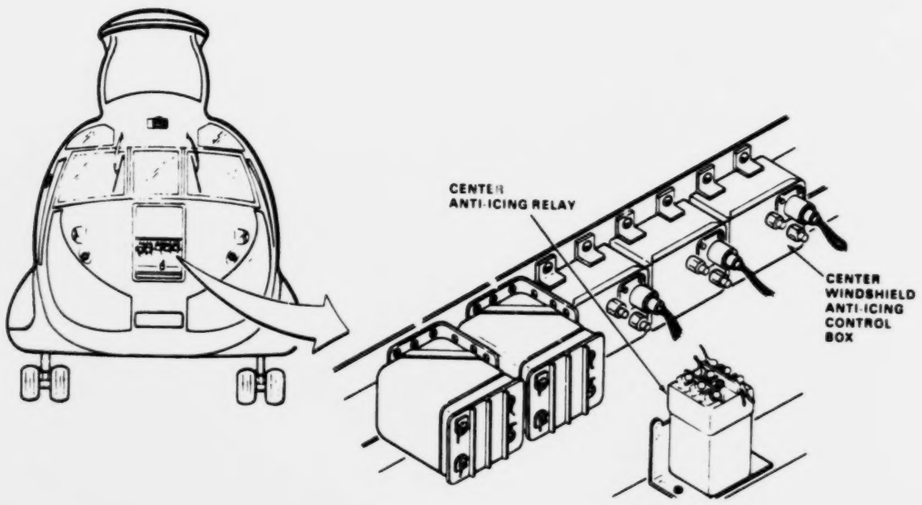
12-1.10 CENTER WINDSHIELD DOES NOT GET WARM (Continued)





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END OF TASK

12-1.11 CENTER WINDSHIELD CONTINUES TO HEAT WHEN CTR WINDSHIELD SWITCH IS AT OFF

FAULT ISOLATIONPROCEDURE

INITIAL SETUP

Applicable Configurations:
All

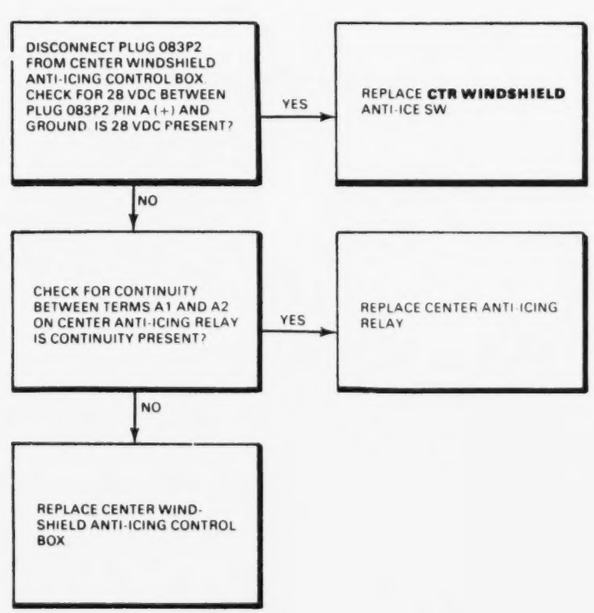
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

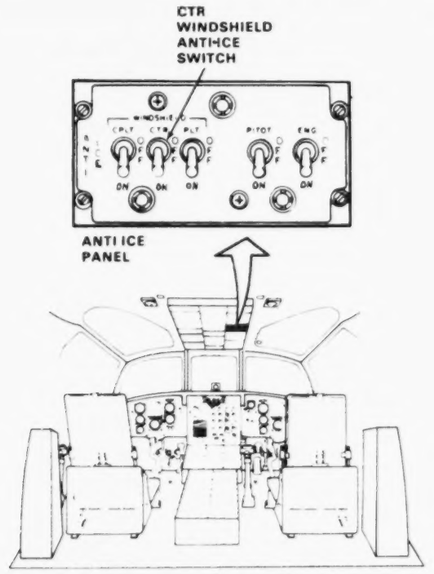
Materials:
None

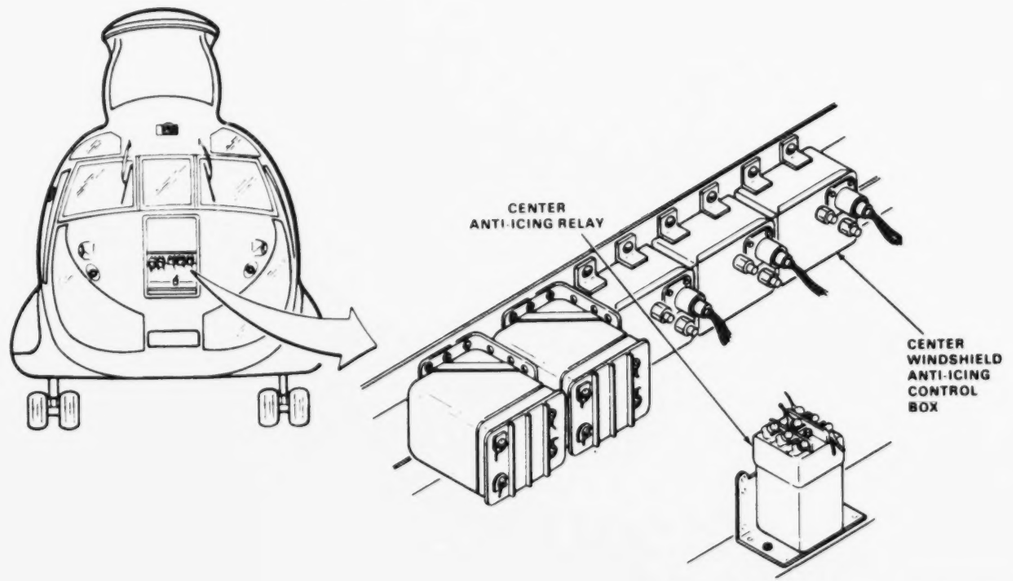
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Nose Dynamic Absorber Removed


DISCONNECT PLUG 083P2 FROM CENTER WINDSHIELD ANTI-ICING CONTROL BOX. CHECK FOR 28 VDC BETWEEN PLUG 083P2 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE CTR WINDSHIELD ANTI-ICE SW
NO
CHECK FOR CONTINUITY BETWEEN TERMS A1 AND A2 ON CENTER ANTI-ICING RELAY. IS CONTINUITY PRESENT?
YES
REPLACE CENTER ANTI-ICING RELAY
NO
REPLACE CENTER WIND-SHIELD ANTI-ICING CONTROL BOX





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END OF TASK

12-1.12 PILOT WSHLD ANTI ICE CONT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

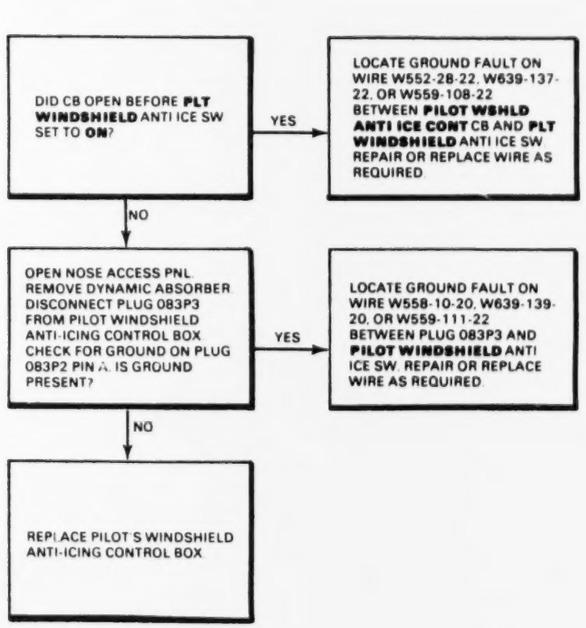
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

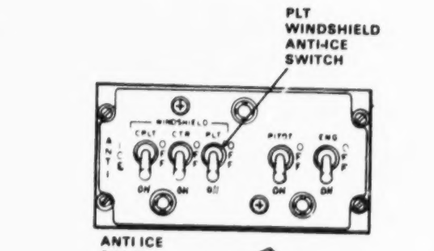
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

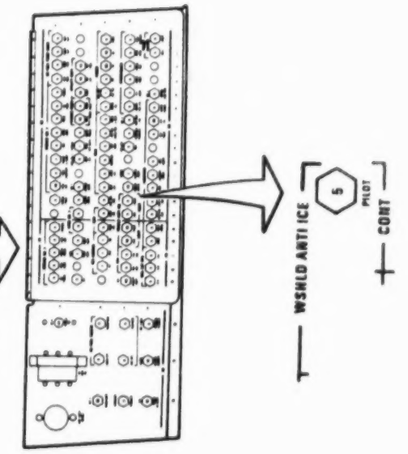
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

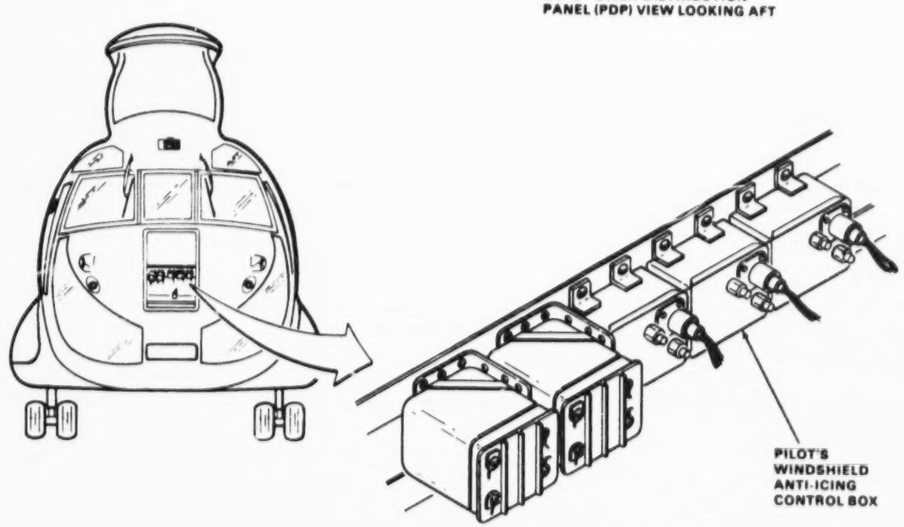

DID CB OPEN BEFORE PLT WINDSHIELD ANTI ICE SW SET TO ON?
YES
LOCATE GROUND FAULT ON WIRE W552-28-22, W639-137-22, OR W559-108-22 BETWEEN PILOT WSHLD ANTI ICE CONT CB AND PLT WINDSHIELD ANTI ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED
NO
OPEN NOSE ACCESS PNL. REMOVE DYNAMIC ABSORBER. DISCONNECT PLUG 083P3 FROM PILOT WINDSHIELD ANTI-ICING CONTROL BOX. CHECK FOR GROUND ON PLUG 083P2 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W558-10-20, W639-139-20, OR W559-111-22 BETWEEN PLUG 083P3 AND PILOT WINDSHIELD ANTI ICE SW. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX



COCKPIT



NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



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DI45-5379-SPA

END OF TASK

12-1.13 PILOT WSHLD ANTI ICE HEAT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

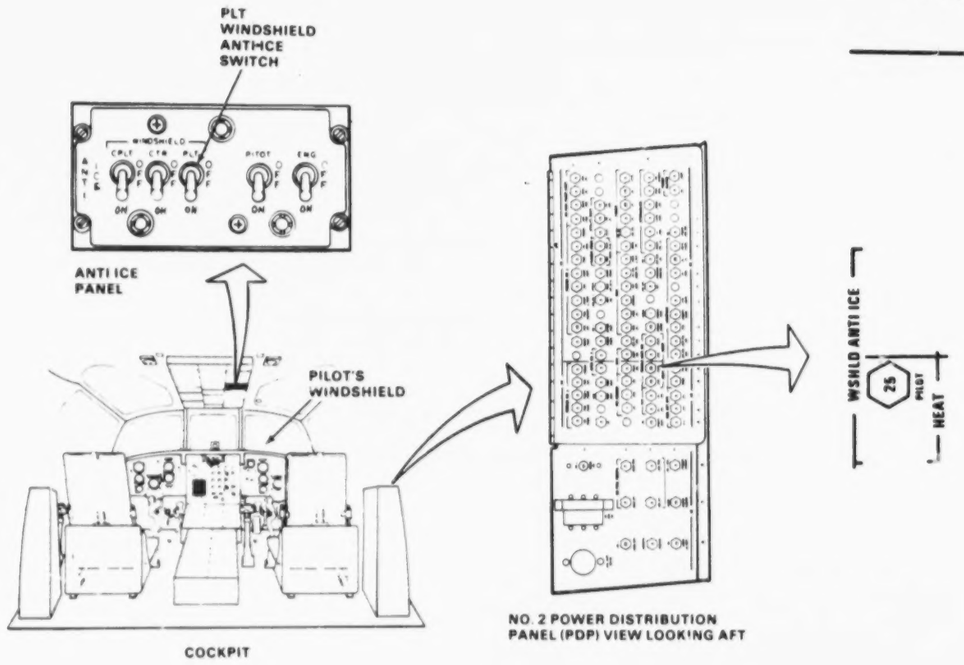
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

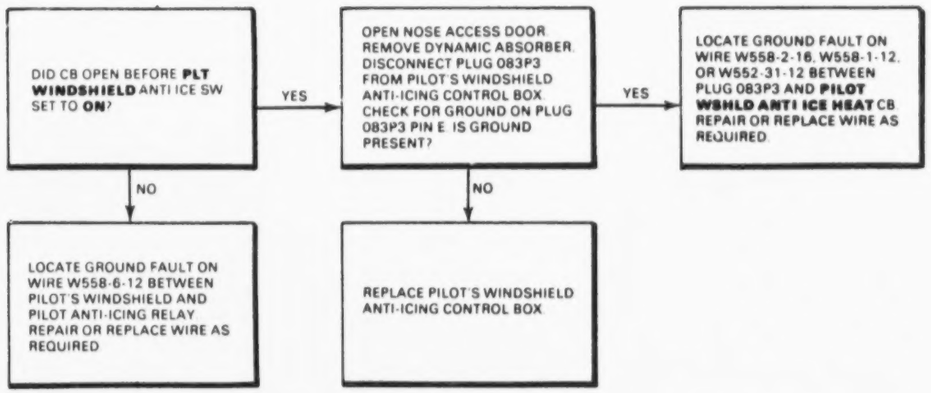
Materials:
None

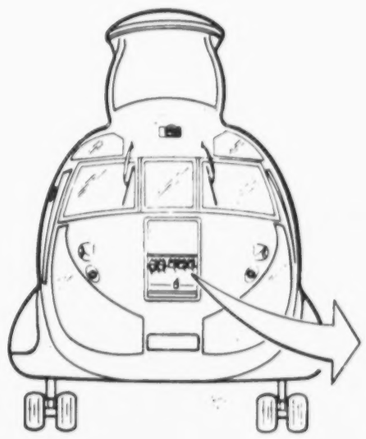
Personnel Required:
68F20 Aircraft Electrician

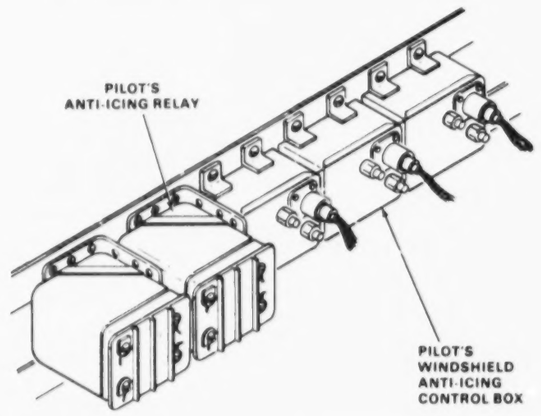
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off




DID CB OPEN BEFORE PLT WINDSHIELD ANTI ICE SW SET TO ON?
YES
NO
OPEN NOSE ACCESS DOOR. REMOVE DYNAMIC ABSORBER. DISCONNECT PLUG 083P3 FROM PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX. CHECK FOR GROUND ON PLUG 083P3 PIN E. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W558-2-16, W558-1-12, OR W552-31-12 BETWEEN PLUG 083P3 AND PILOT WSHLD ANTI ICE HEAT CB. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W558-6-12 BETWEEN PILOT'S WINDSHIELD AND PILOT ANTI-ICING RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX.





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DI45-5380-SPA

END OF TASK

12-1.14 PILOT'S WINDSHIELD DOES NOT GET WARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

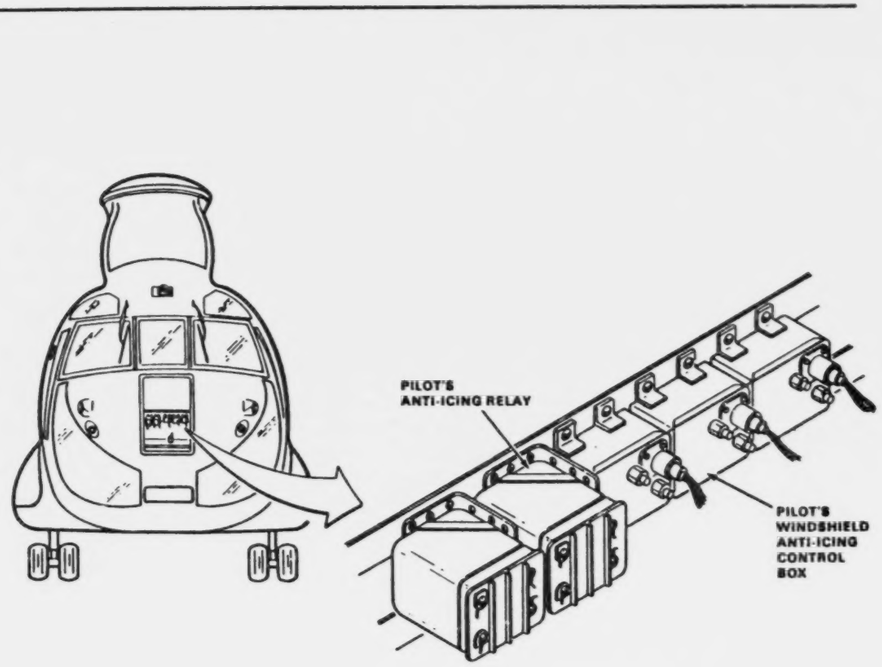
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

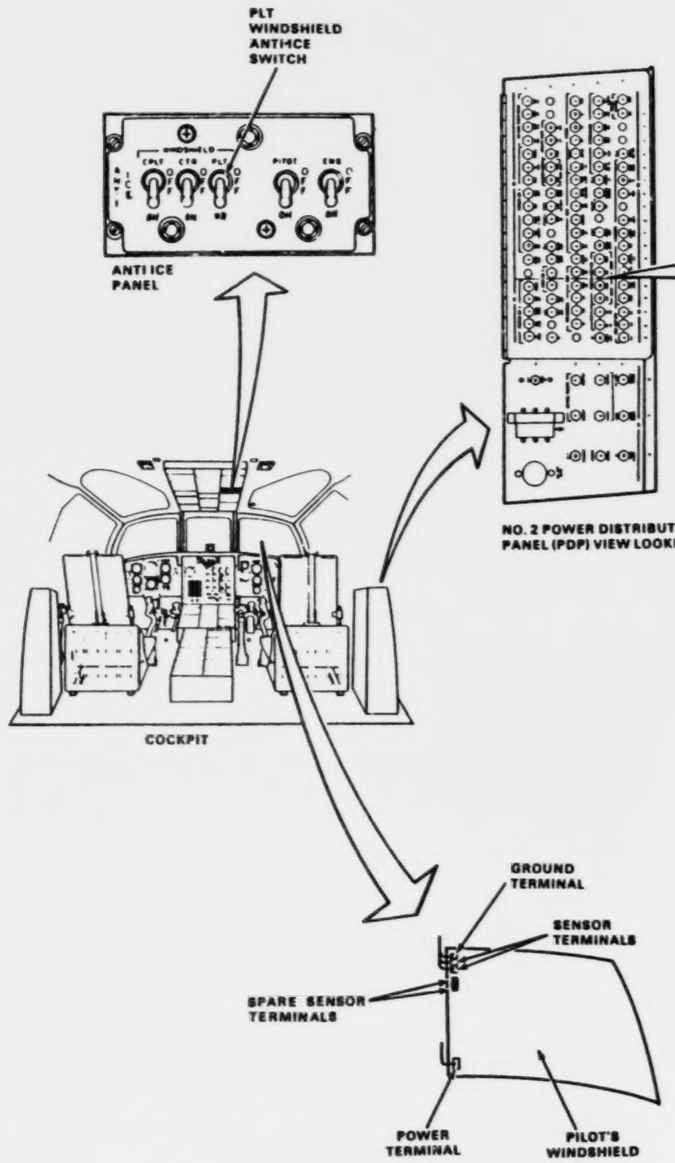
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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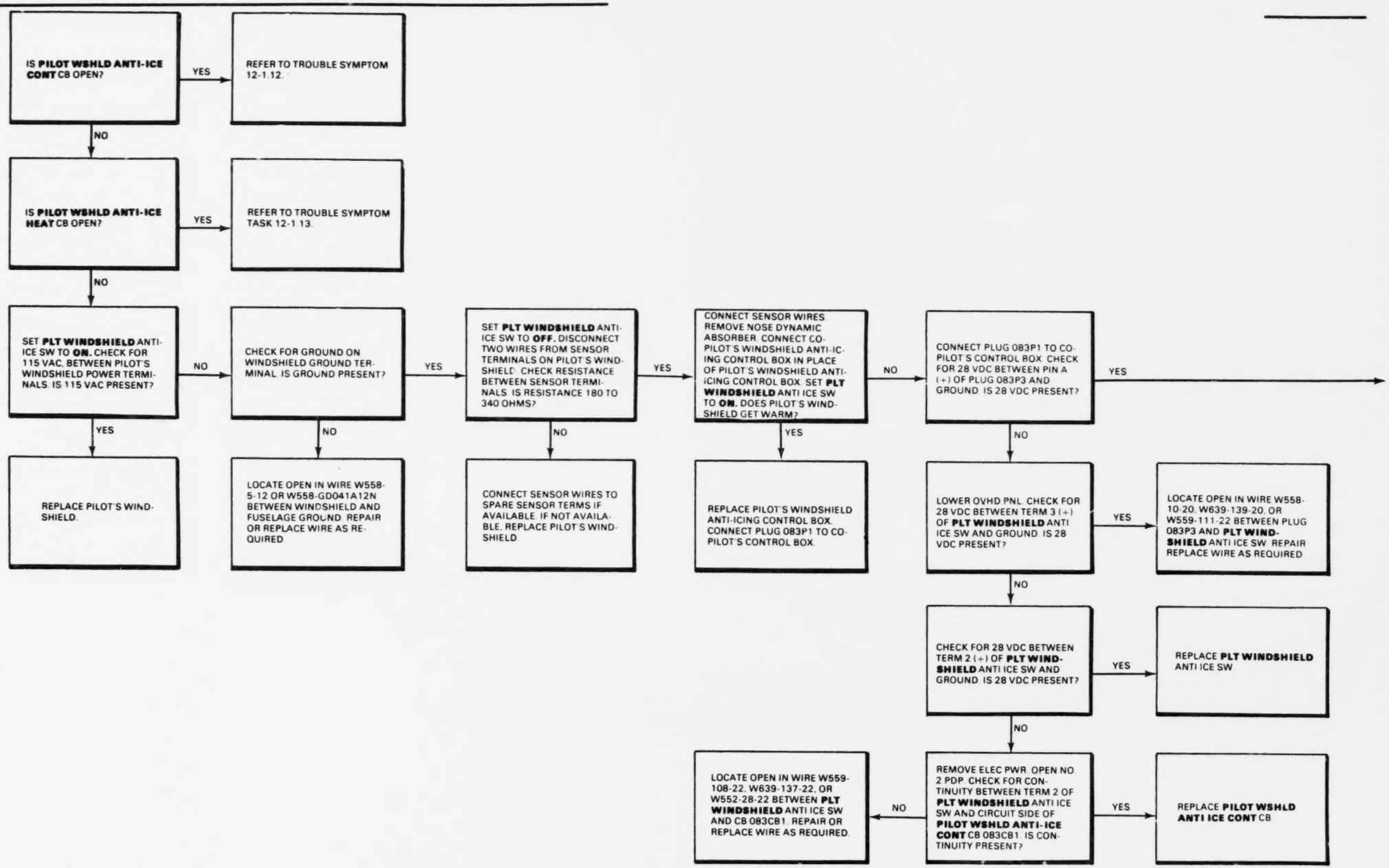
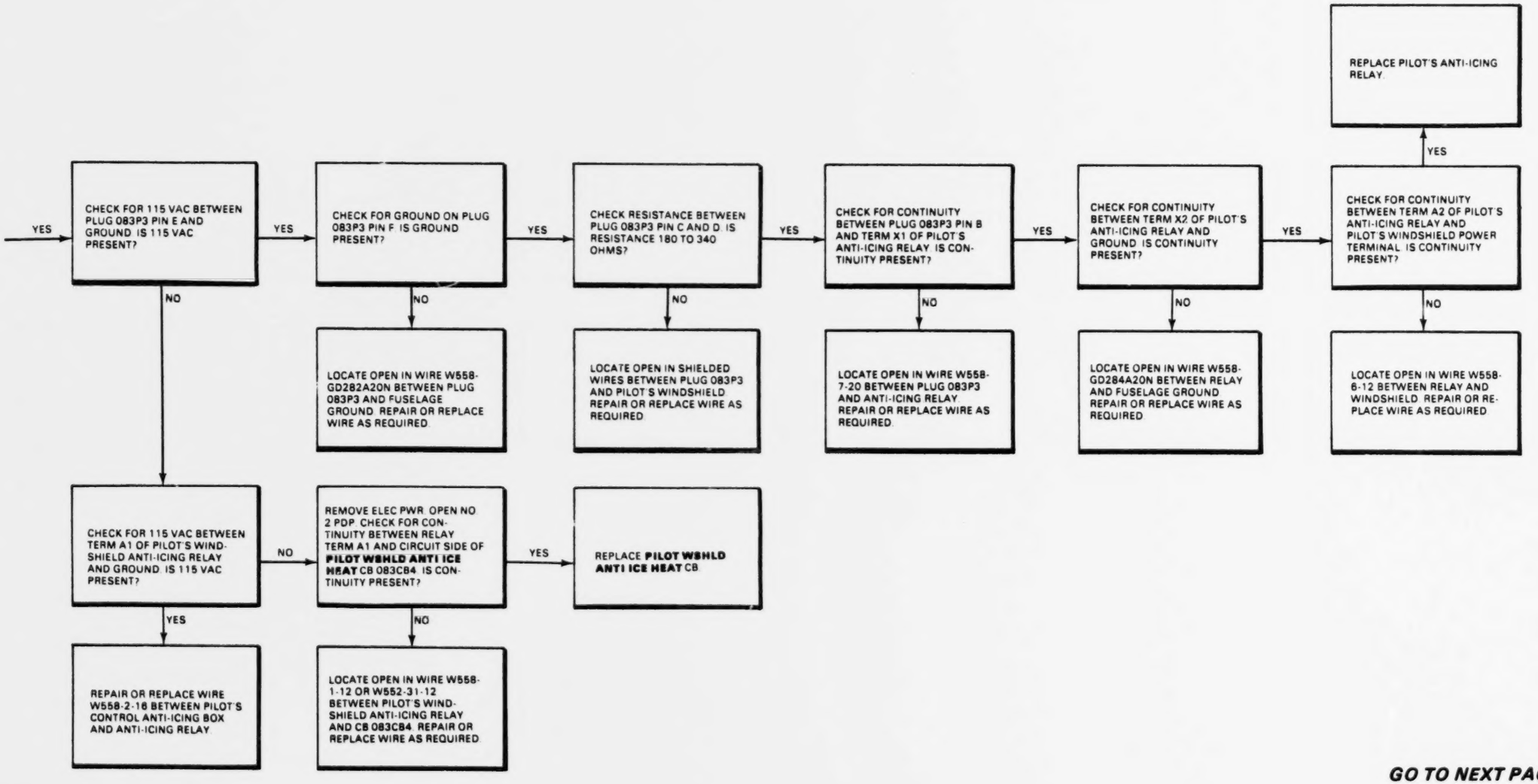
12-1.14 PILOT'S WINDSHIELD DOES NOT GET WARM (Continued)


IS PILOT WSHLD ANTI-ICE CONT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM 12-1.12.
NO
IS PILOT WSHLD ANTI-ICE HEAT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-1.13.
NO
SET PLT WINDSHIELD ANTI-ICE SW TO ON. CHECK FOR 115 VAC. BETWEEN PILOT'S WINDSHIELD POWER TERMINALS. IS 115 VAC PRESENT?
NO
CHECK FOR GROUND ON WINDSHIELD GROUND TERMINAL. IS GROUND PRESENT?
YES
SET PLT WINDSHIELD ANTI-ICE SW TO OFF. DISCONNECT TWO WIRES FROM SENSOR TERMINALS ON PILOT'S WINDSHIELD. CHECK RESISTANCE BETWEEN SENSOR TERMINALS. IS RESISTANCE 180 TO 340 OHMS?
YES
CONNECT SENSOR WIRES. REMOVE NOSE DYNAMIC ABSORBER. CONNECT CO-PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX IN PLACE OF PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX. SET PLT WINDSHIELD ANTI ICE SW TO ON. DOES PILOT'S WINDSHIELD GET WARM?
NO
CONNECT PLUG 083P1 TO CO-PILOT'S CONTROL BOX. CHECK FOR 28 VDC BETWEEN PIN A (+) OF PLUG 083P3 AND GROUND. IS 28 VDC PRESENT?
YES
YES
REPLACE PILOT'S WINDSHIELD.
NO
LOCATE OPEN IN WIRE W558-5-12 OR W558-GD041A12N BETWEEN WINDSHIELD AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CONNECT SENSOR WIRES TO SPARE SENSOR TERMS IF AVAILABLE. IF NOT AVAILABLE, REPLACE PILOT'S WINDSHIELD.
YES
REPLACE PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX. CONNECT PLUG 083P1 TO CO-PILOT'S CONTROL BOX.
NO
LOWER OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 3 (+) OF PLT WINDSHIELD ANTI ICE SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W558-10-20, W639-139-20, OR W559-111-22 BETWEEN PLUG 083P3 AND PLT WINDSHIELD ANTI ICE SW. REPAIR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28 VDC BETWEEN TERM 2 (+) OF PLT WINDSHIELD ANTI ICE SW AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE PLT WINDSHIELD ANTI ICE SW.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. CHECK FOR CONTINUITY BETWEEN TERM 2 OF PLT WINDSHIELD ANTI ICE SW AND CIRCUIT SIDE OF PILOT WSHLD ANTI-ICE CONT CB 083CB1. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE W559-108-22, W639-137-22, OR W552-28-22 BETWEEN PLT WINDSHIELD ANTI ICE SW AND CB 083CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE PILOT WSHLD ANTI ICE CONT CB.

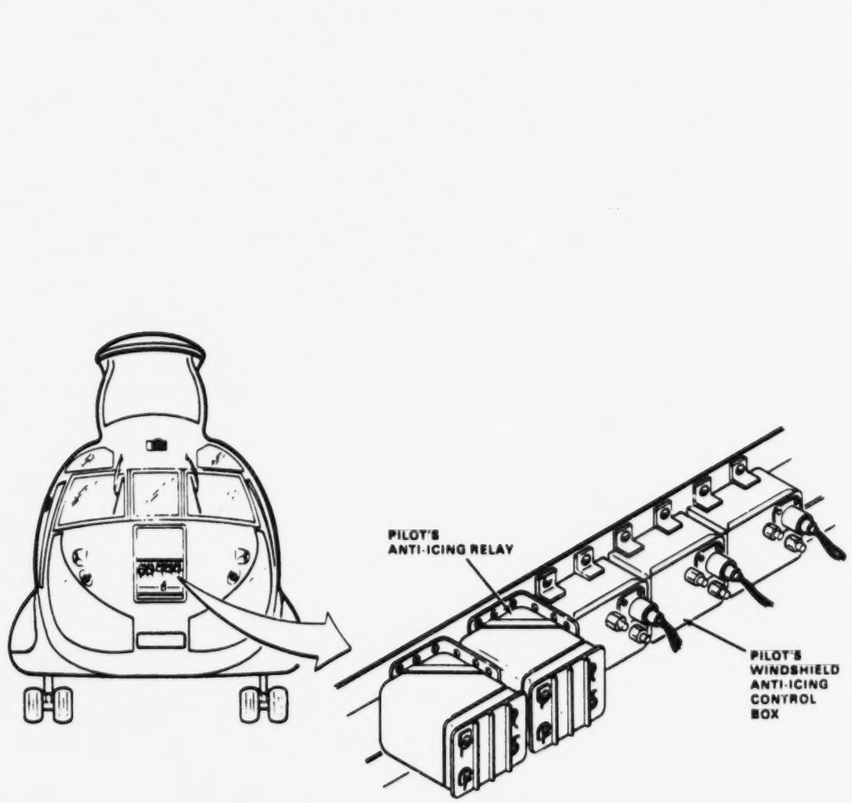
GO TO NEXT PAGE

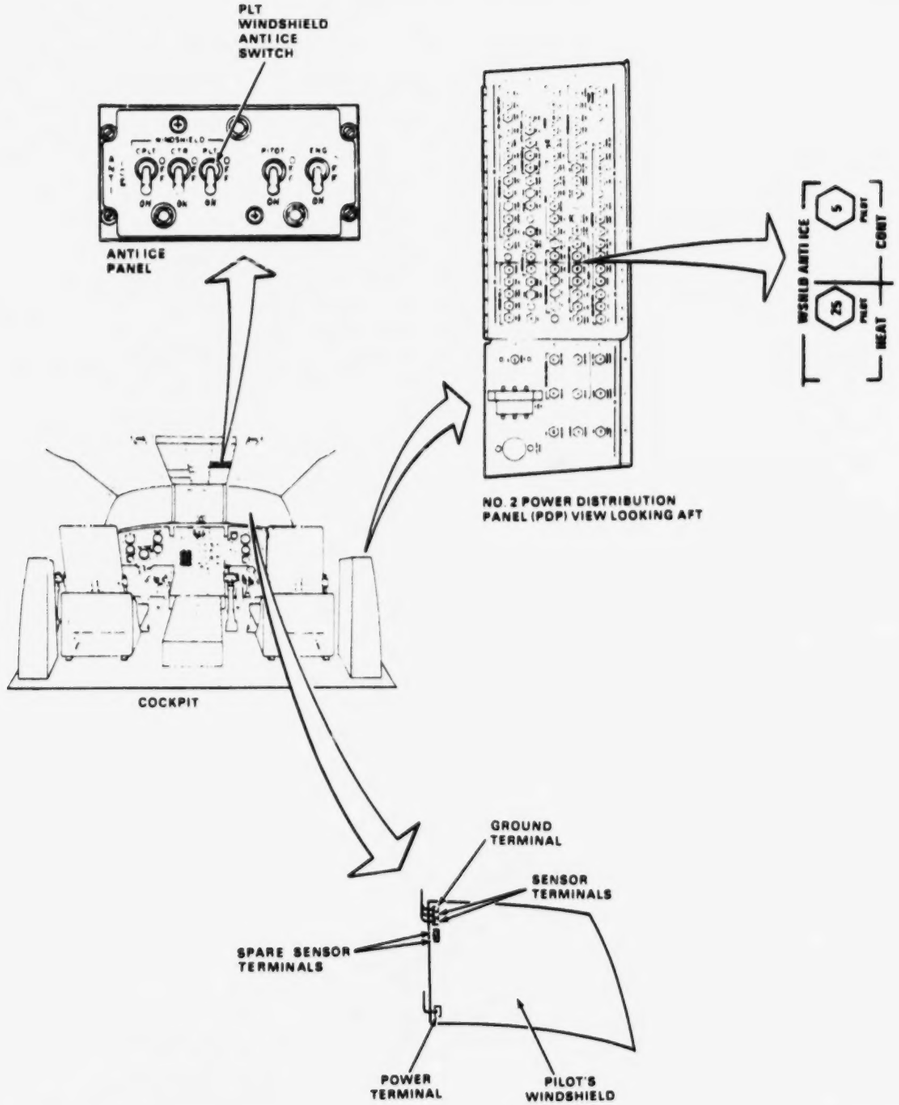
12-1.14 PILOT'S WINDSHIELD DOES NOT GET WARM (Continued)


CHECK FOR 115 VAC BETWEEN PLUG 083P3 PIN E AND GROUND. IS 115 VAC PRESENT?
YES
NO
CHECK FOR GROUND ON PLUG 083P3 PIN F. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-GD282A20N BETWEEN PLUG 083P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK RESISTANCE BETWEEN PLUG 083P3 PIN C AND D. IS RESISTANCE 180 TO 340 OHMS?
YES
NO
LOCATE OPEN IN SHIELDED WIRES BETWEEN PLUG 083P3 AND PILOT'S WINDSHIELD. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 083P3 PIN B AND TERM X1 OF PILOT'S ANTI-ICING RELAY. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-7-20 BETWEEN PLUG 083P3 AND ANTI-ICING RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN TERM X2 OF PILOT'S ANTI-ICING RELAY AND GROUND. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W558-GD284A20N BETWEEN RELAY AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN TERM A2 OF PILOT'S ANTI-ICING RELAY AND PILOT'S WINDSHIELD POWER TERMINAL. IS CONTINUITY PRESENT?
YES
REPLACE PILOT'S ANTI-ICING RELAY.
NO
LOCATE OPEN IN WIRE W558-6-12 BETWEEN RELAY AND WINDSHIELD. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 115 VAC BETWEEN TERM A1 OF PILOT'S WINDSHIELD ANTI-ICING RELAY AND GROUND. IS 115 VAC PRESENT?
YES
REPAIR OR REPLACE WIRE W558-2-18 BETWEEN PILOT'S CONTROL ANTI-ICING BOX AND ANTI-ICING RELAY.
NO
REMOVE ELEC PWR. OPEN NO 2 PDP. CHECK FOR CONTINUITY BETWEEN RELAY TERM A1 AND CIRCUIT SIDE OF PILOT WSHLD ANTI ICE HEAT CB 083CB4. IS CONTINUITY PRESENT?
YES
REPLACE PILOT WSHLD ANTI ICE HEAT CB.
NO
LOCATE OPEN IN WIRE W558-1-12 OR W552-31-12 BETWEEN PILOT'S WINDSHIELD ANTI-ICING RELAY AND CB 083CB4. REPAIR OR REPLACE WIRE AS REQUIRED.

GO TO NEXT PAGE

12-1.14 PILOT'S WINDSHIELD DOES NOT GET WARM (Continued)





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END OF TASK

12-1.15 PILOT'S WINDSHIELD CONTINUES TO HEAT WHEN PLT WINDSHIELD SWITCH IS AT OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

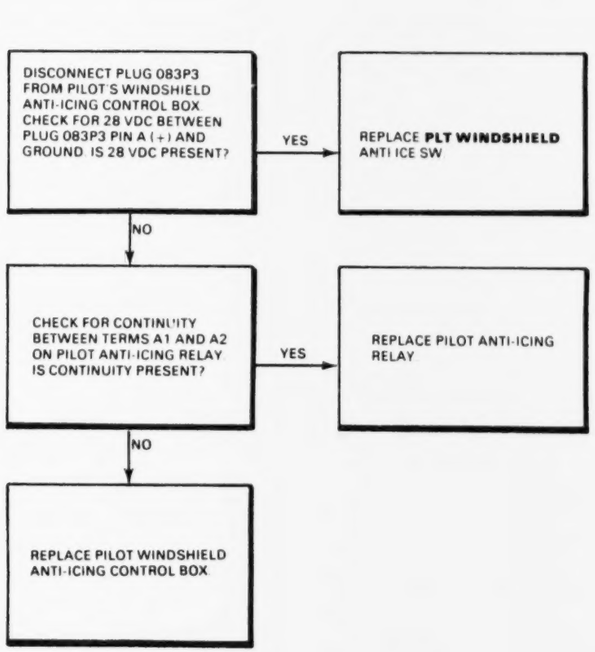
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

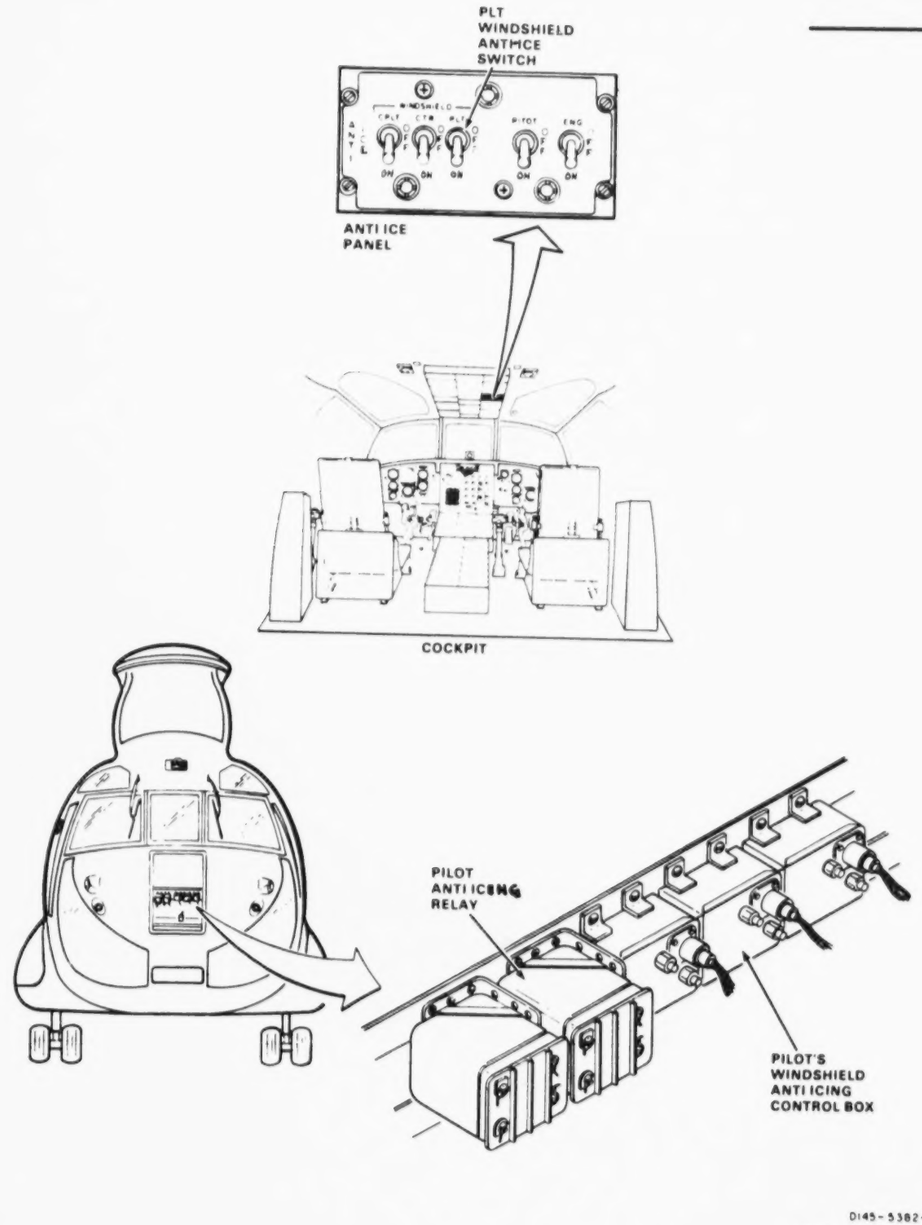
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off
Nose Dynamic Absorber Removed


DISCONNECT PLUG 083P3 FROM PILOT'S WINDSHIELD ANTI-ICING CONTROL BOX CHECK FOR 28 VDC BETWEEN PLUG 083P3 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE PLT WINDSHIELD ANTI ICE SW
NO
CHECK FOR CONTINUITY BETWEEN TERMS A1 AND A2 ON PILOT ANTI-ICING RELAY. IS CONTINUITY PRESENT?
YES
REPLACE PILOT ANTI-ICING RELAY
NO
REPLACE PILOT WINDSHIELD ANTI-ICING CONTROL BOX



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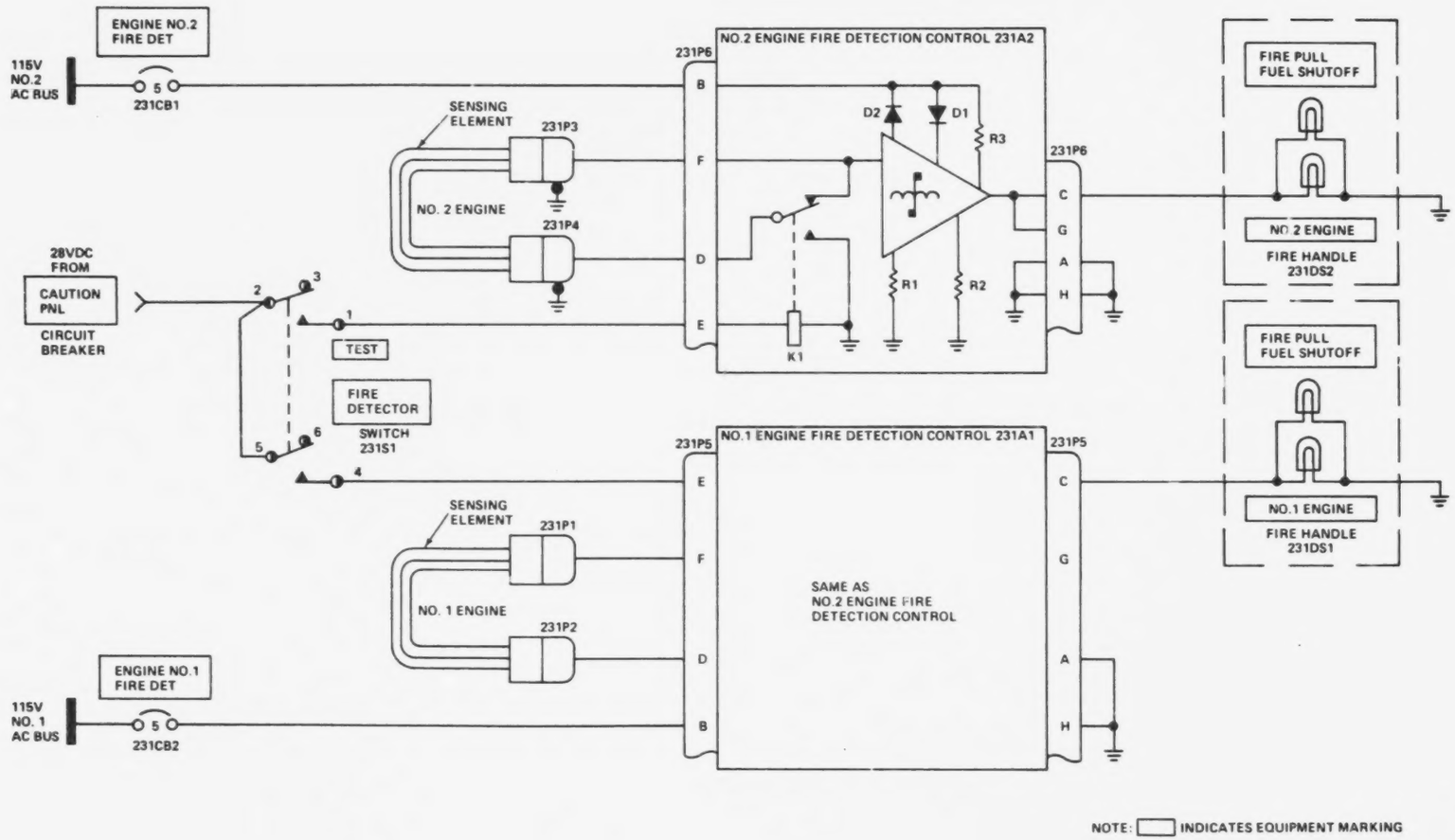
END OF TASK

12-2 FIRE DETECTION SYSTEM

12-2 FIRE DETECTION SYSTEM

12-2.1 FIRE DETECTION SYSTEM SCHEMATIC



NOTE: ▭ INDICATES EQUIPMENT MARKING

68 x 54

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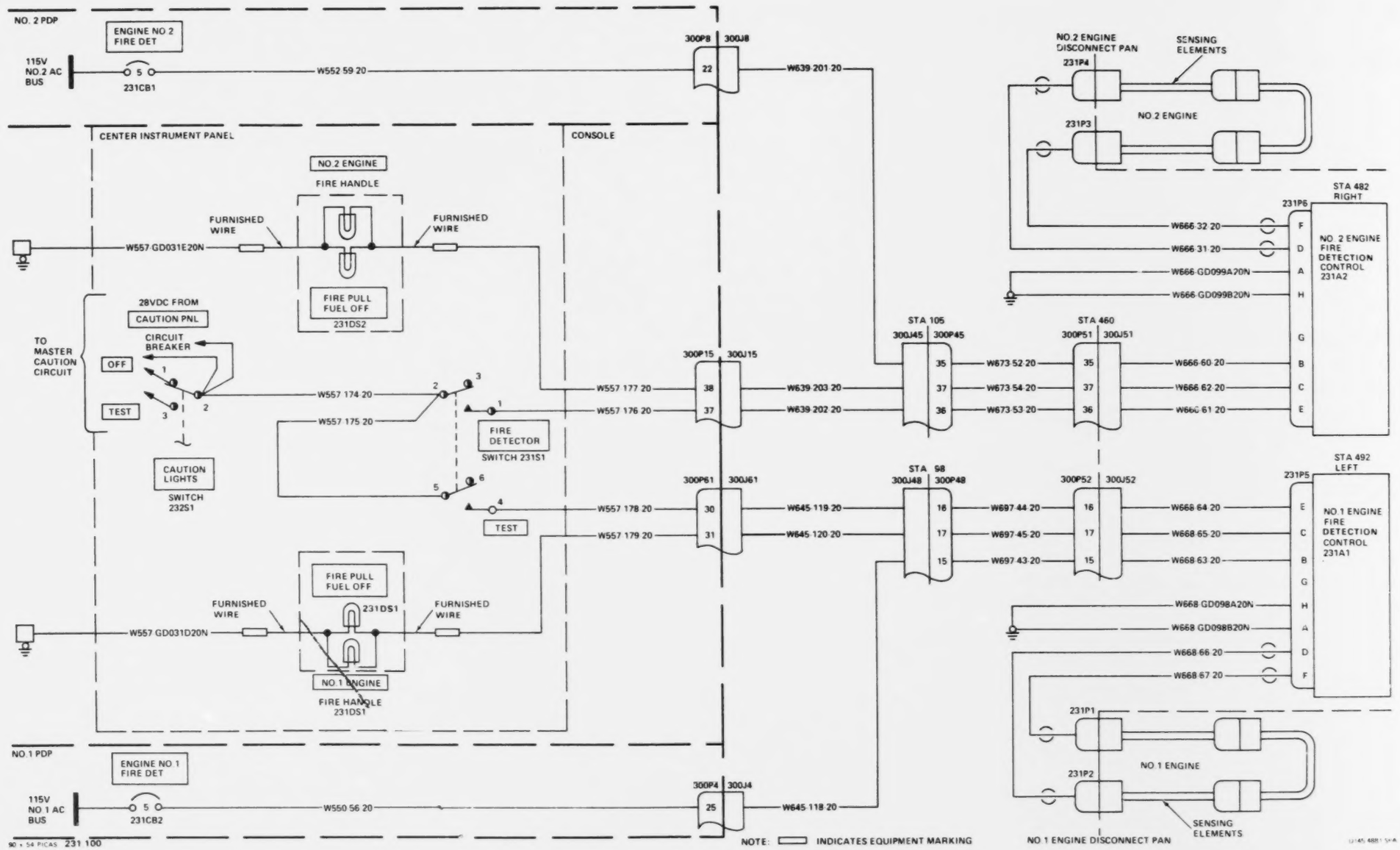
12-2.2 FIRE DETECTION SYSTEM WIRING DIAGRAM



12-2.3 FIRE DETECTION SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

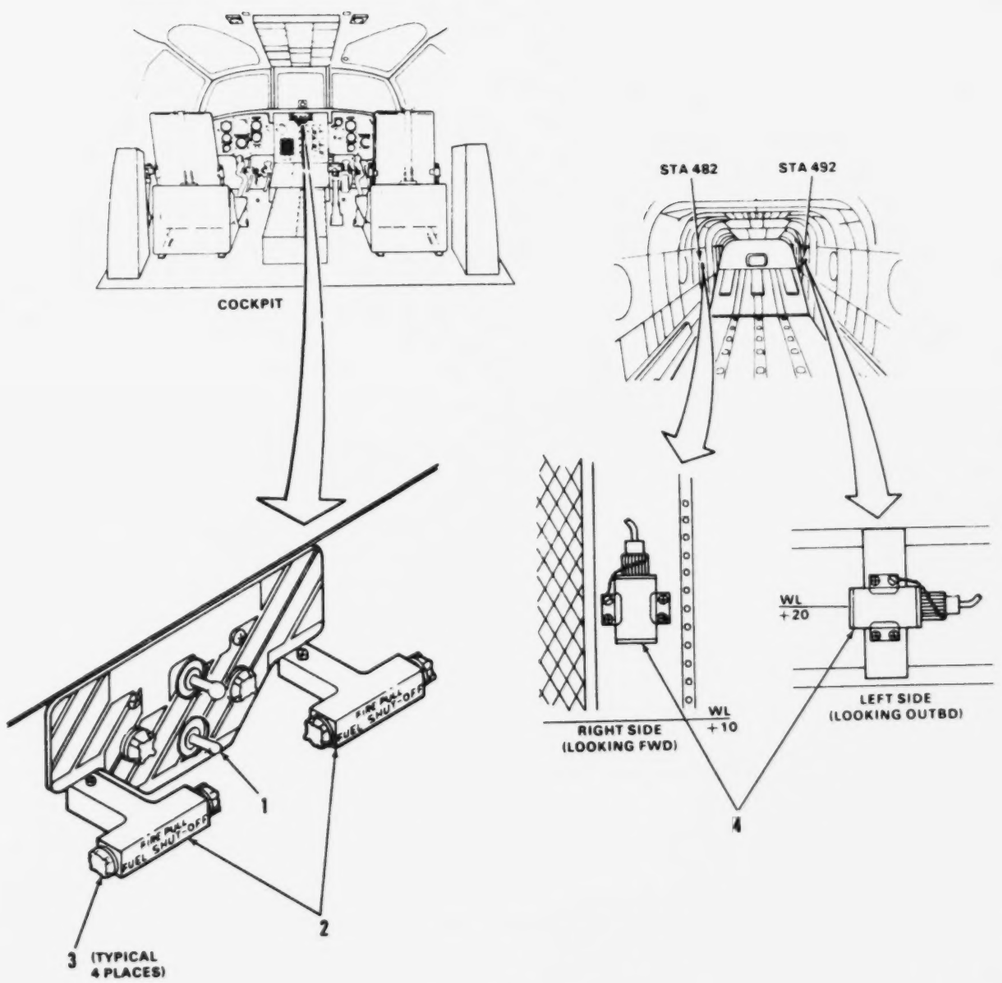
Materials:
None

Personnel Required:
68F10 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
No. 1 and No. 2 Engine
Access Covers Open

1. **Check Fire Detector switch (1).**	If switch (1) is loose or damaged, tighten or replace it as required.
2. **Check No. 1 engine and No. 2 engine fire handles (2).**	If either fire handle (2) is loose or damaged, tighten or replace it as required. If any light (3) is loose or damaged, tighten or replace it as required.
3. **Check No. 1 and No. 2 engine fire detection controls (4).**	If either control (4) is loose or damaged, tighten or replace it as required. If wiring to either control is damaged, repair or replace it as required.
4. **Check sensing elements (5) around No. 1 engine.**	If any element (5) is damaged or kinked, replace it. If element connector (6) is loose, tighten it.
5. **Check sensing elements (7) around No. 2 engine.**	If any element (7) is damaged or kinked, replace it. If any element connector (6) is loose, tighten it.



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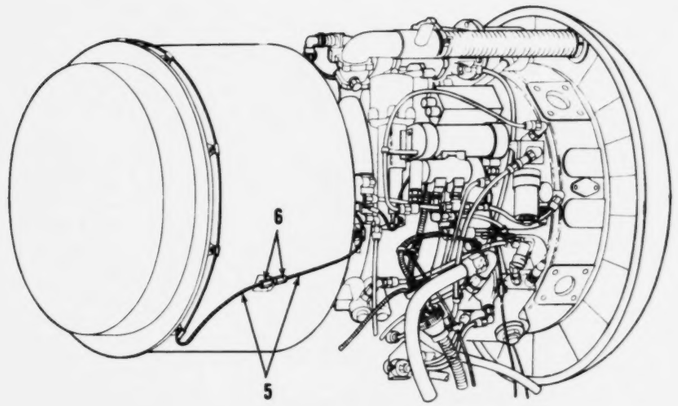
DI45-5028-SPA

FOLLOW-ON MAINTENANCE:

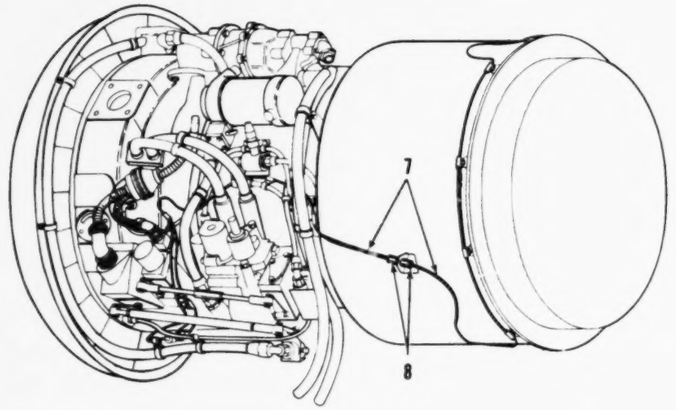
TM 55-1520-240-23:
Close No. 1 and No. 2 engine access covers.

GO TO NEXT PAGE

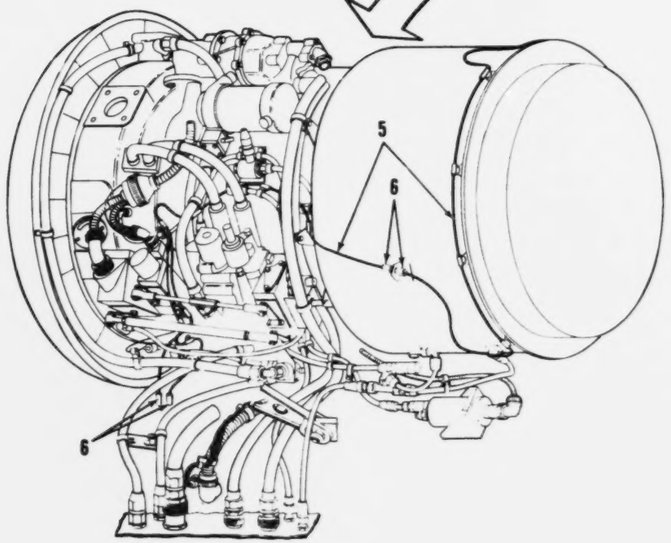
12-2.3 FIRE DETECTION SYSTEM VISUAL CHECK (Continued)



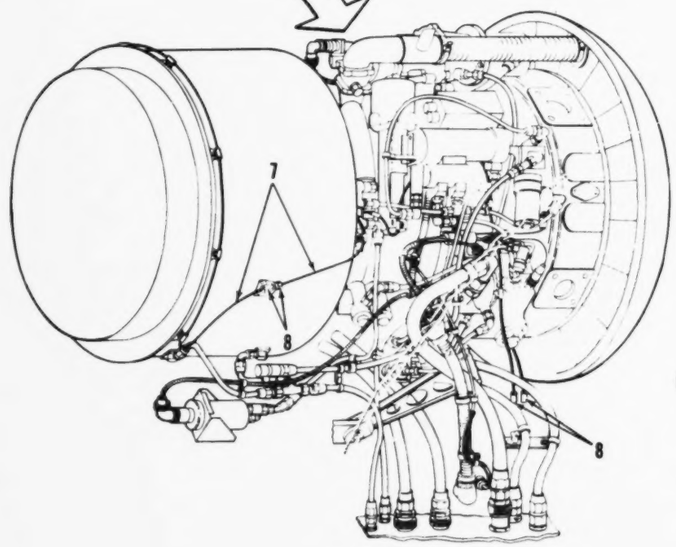
NO.1 (LEFT) ENGINE - R SIDE



NO. 2 (RIGHT) ENGINE - L SIDE



NO. 1 (LEFT) ENGINE - L SIDE



NO. 2 (RIGHT) ENGINE - R SIDE

NOTE:

TAIL CONES REMOVED FOR CLARITY

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DI45-5029-SPA

END OF TASK

12-2.4 FIRE DETECTION SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

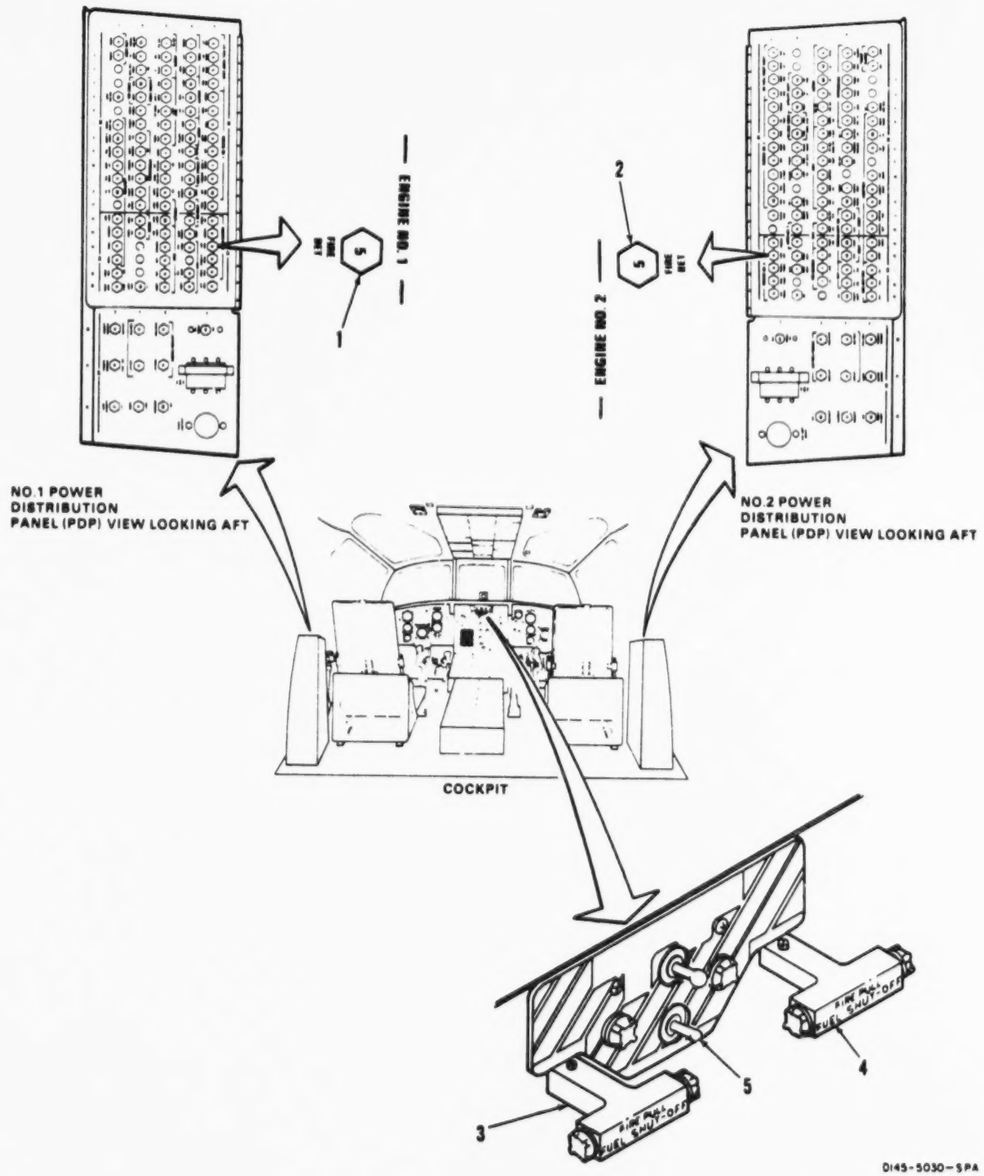
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Visual Check of Fire Detection System Performed (Task 12-2.3)

1. **Check** that **ENGINE NO. 1 FIRE DET circuit breaker (1)** is closed.	If ENGINE NO. 1 FIRE DET circuit breaker (1) is open, close it. If it opens again, go to Task 12-2.5.
2. **Check** that **ENGINE NO. 2 FIRE DET circuit breaker (2)** is closed.	If ENGINE NO. 2 FIRE DET circuit breaker (2) is open, close it. If it opens again, go to Task 12-2.5.
3. **Check NO. 1 ENGINE and NO. 2 ENGINE fire handles (3 and 4).**	If either fire handle (3 or 4) caption FIRE PULL/FUEL SHUTOFF is lit, go to Task 12-2.6 or 12-2.7.
4. **Set and hold FIRE DETECTOR switch (5) to TEST.**	FIRE PULL/FUEL SHUTOFF captions in NO. 1 ENGINE and NO. 2 ENGINE fire handle (3 and 4) shall light. If both captions do not come on, go to Task 12-2.8. If either caption does not come on, go to Task 12-2.9 or 12-2.10.
5. **Release FIRE DETECTOR switch (5).**	Both FIRE PULL/FUEL SHUTOFF captions in NO. 1 ENGINE and NO. 2 ENGINE fire handles (3 and 4) shall go out. If both captions do not go out, replace FIRE DETECTOR switch (5).



FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Electrical Power Off
Battery Disconnected

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END OF TASK

12-2.5 FIRE DET CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

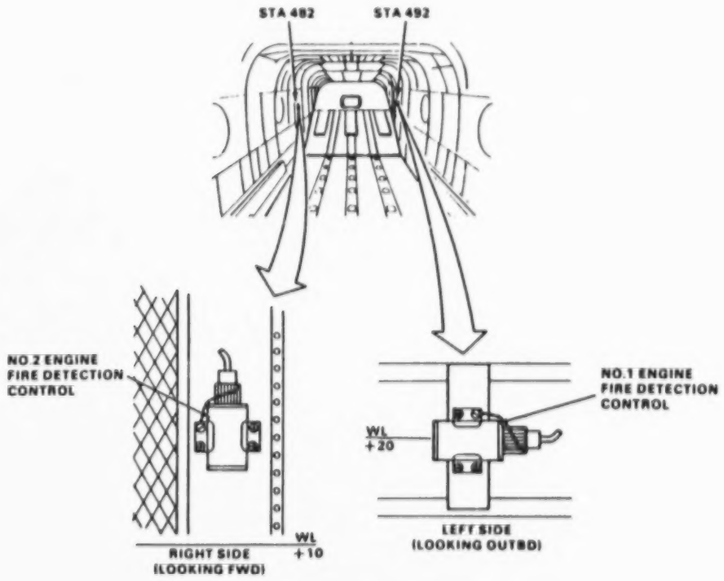
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

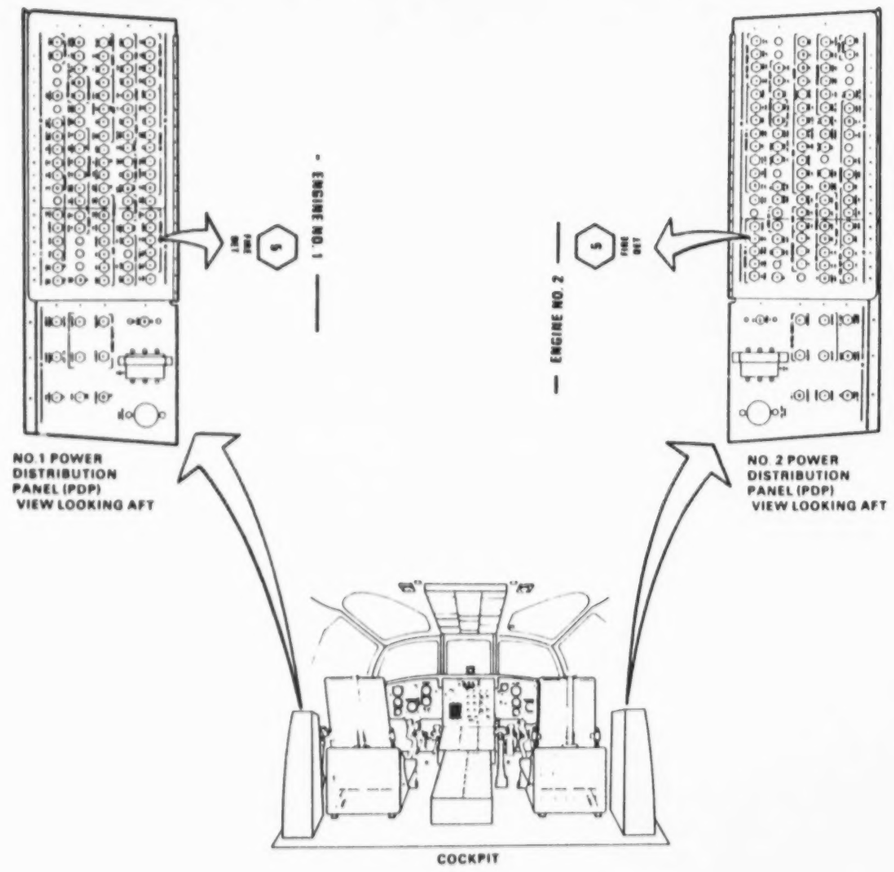
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off





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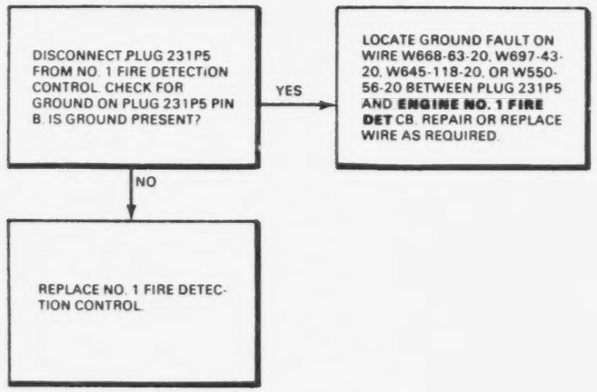
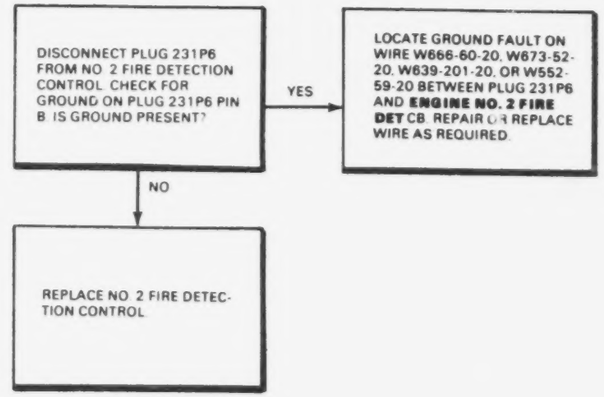
12-2.5 FIRE DET CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

ENGINE NO. 1 FIRE DET CIRCUIT BREAKER WILL NOT STAY CLOSED


DISCONNECT PLUG 231P5 FROM NO. 1 FIRE DETECTION CONTROL. CHECK FOR GROUND ON PLUG 231P5 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W668-63-20, W697-43-20, W645-118-20, OR W550-56-20 BETWEEN PLUG 231P5 AND ENGINE NO. 1 FIRE DET CB. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 1 FIRE DETECTION CONTROL.

ENGINE NO. 2 FIRE DET CIRCUIT BREAKER WILL NOT STAY CLOSED


DISCONNECT PLUG 231P6 FROM NO. 2 FIRE DETECTION CONTROL. CHECK FOR GROUND ON PLUG 231P6 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-60-20, W673-52-20, W639-201-20, OR W552-59-20 BETWEEN PLUG 231P6 AND ENGINE NO. 2 FIRE DET CB. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE NO. 2 FIRE DETECTION CONTROL

END OF TASK

12-2.6 NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION LIT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

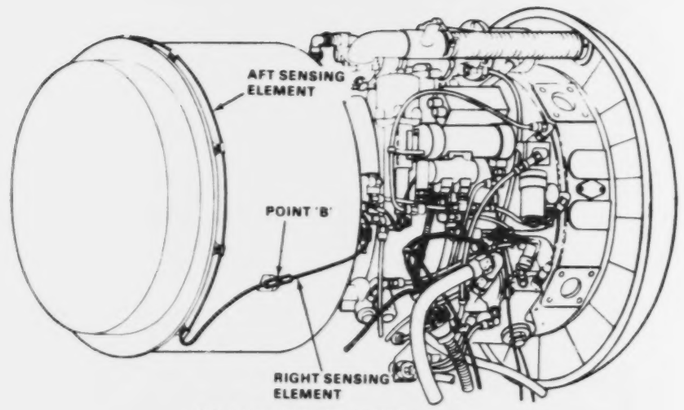
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
Cloth (E120)

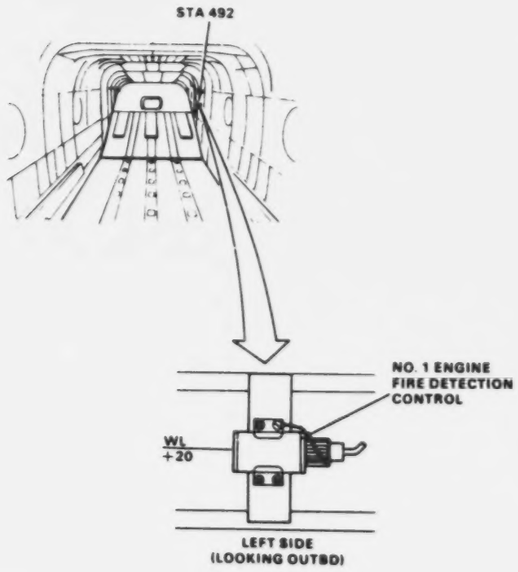
Personnel Required:
68F20 Aircraft Electrician

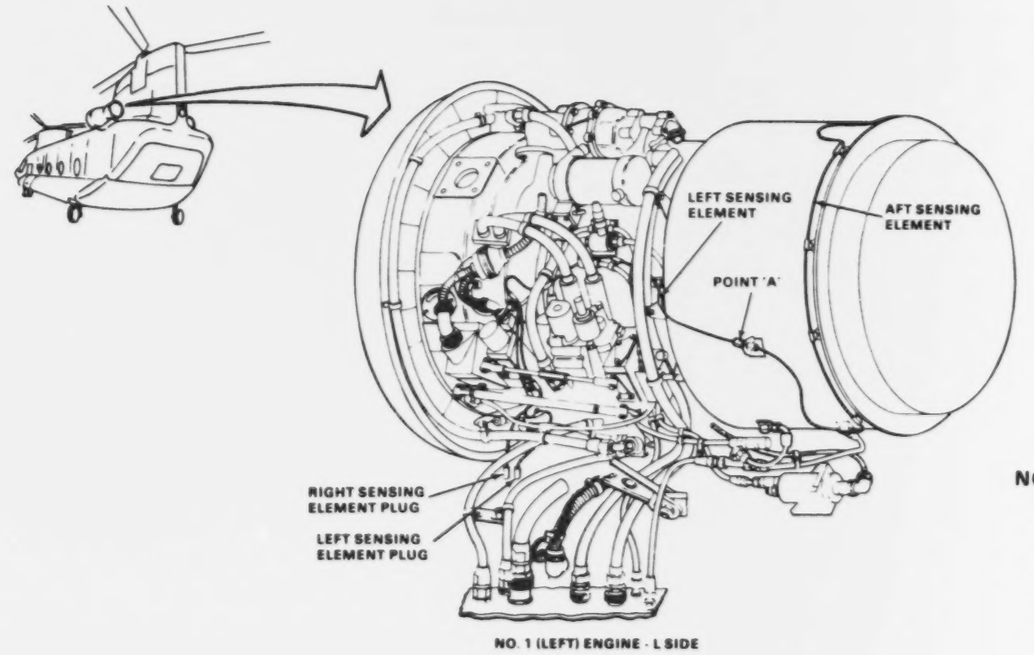
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



NO. 1 (LEFT) ENGINE - R SIDE





NO. 1 (LEFT) ENGINE - L SIDE

NOTE:

TAIL CONE REMOVED FOR CLARITY

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DI45-5032-SPA

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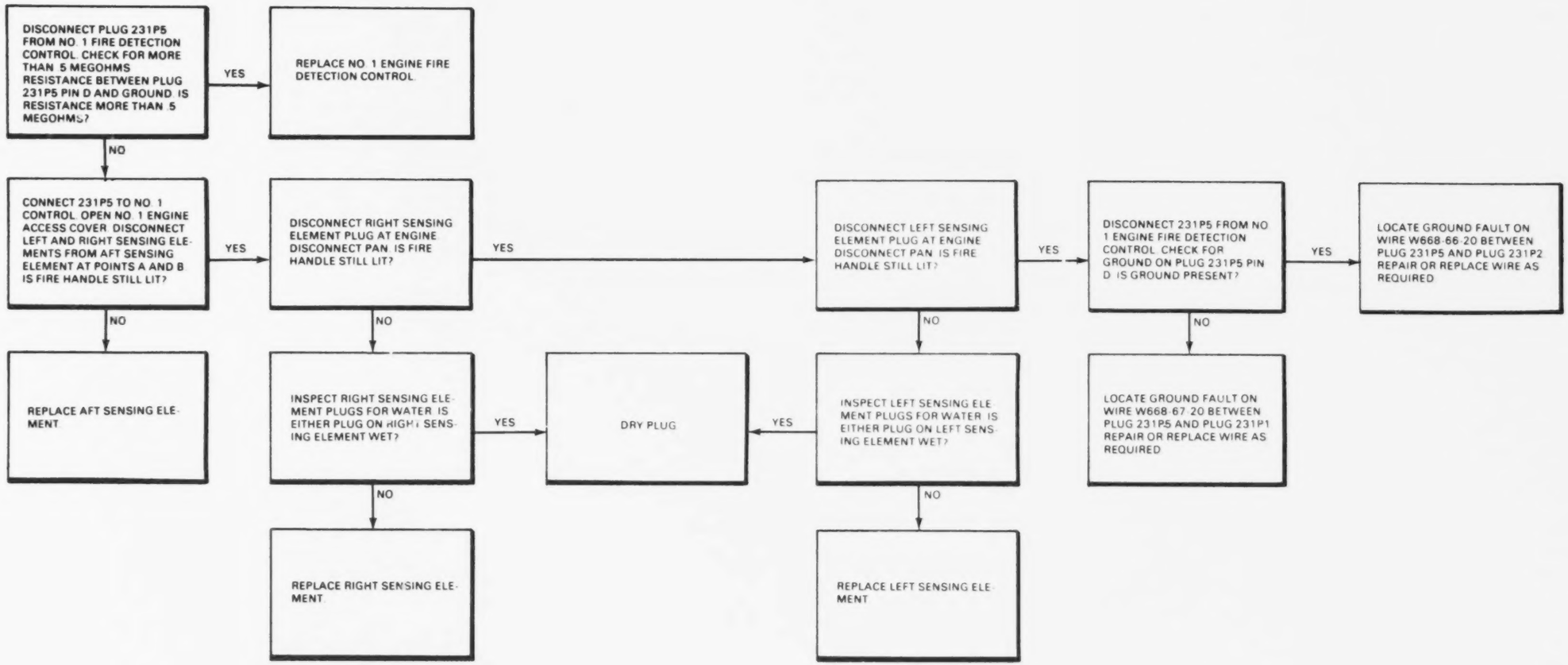
12-2.6 NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION LIT (Continued)


DISCONNECT PLUG 231P5 FROM NO. 1 FIRE DETECTION CONTROL. CHECK FOR MORE THAN .5 MEGOHMS RESISTANCE BETWEEN PLUG 231P5 PIN D AND GROUND. IS RESISTANCE MORE THAN .5 MEGOHMS?
YES
REPLACE NO. 1 ENGINE FIRE DETECTION CONTROL.
NO
CONNECT 231P5 TO NO. 1 CONTROL. OPEN NO. 1 ENGINE ACCESS COVER. DISCONNECT LEFT AND RIGHT SENSING ELEMENTS FROM AFT SENSING ELEMENT AT POINTS A AND B. IS FIRE HANDLE STILL LIT?
YES
DISCONNECT RIGHT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. IS FIRE HANDLE STILL LIT?
YES
DISCONNECT LEFT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. IS FIRE HANDLE STILL LIT?
YES
DISCONNECT 231P5 FROM NO. 1 ENGINE FIRE DETECTION CONTROL. CHECK FOR GROUND ON PLUG 231P5 PIN D. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W668-66-20 BETWEEN PLUG 231P5 AND PLUG 231P2. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE AFT SENSING ELEMENT.
NO
INSPECT RIGHT SENSING ELEMENT PLUGS FOR WATER. IS EITHER PLUG ON RIGHT SENSING ELEMENT WET?
YES
DRY PLUG
YES
INSPECT LEFT SENSING ELEMENT PLUGS FOR WATER. IS EITHER PLUG ON LEFT SENSING ELEMENT WET?
NO
LOCATE GROUND FAULT ON WIRE W668-67-20 BETWEEN PLUG 231P5 AND PLUG 231P1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RIGHT SENSING ELEMENT.
NO
REPLACE LEFT SENSING ELEMENT.

END OF TASK

12-2.7 NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION LIT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

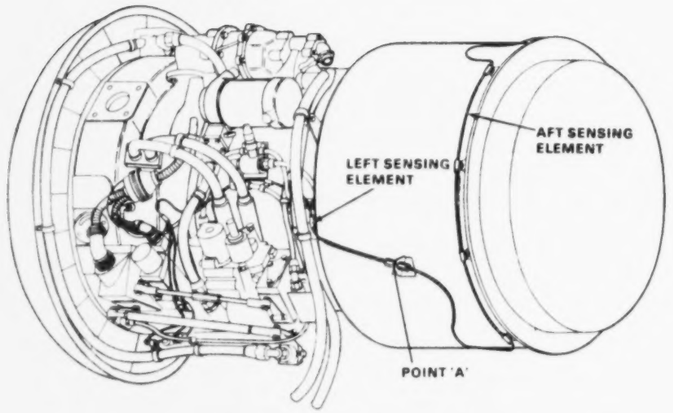
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
Cloth (E120)

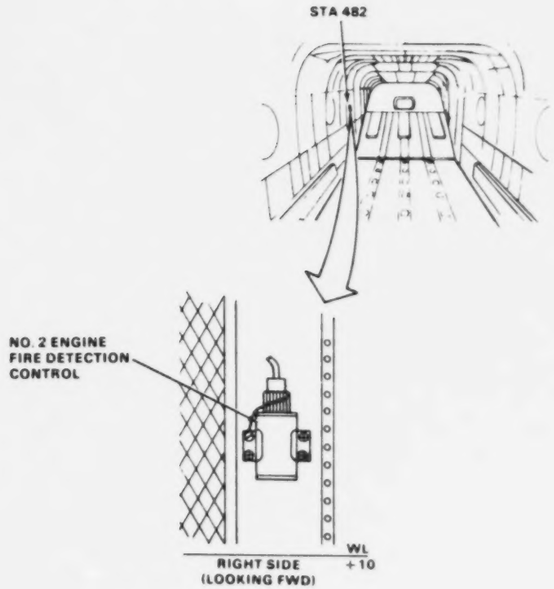
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

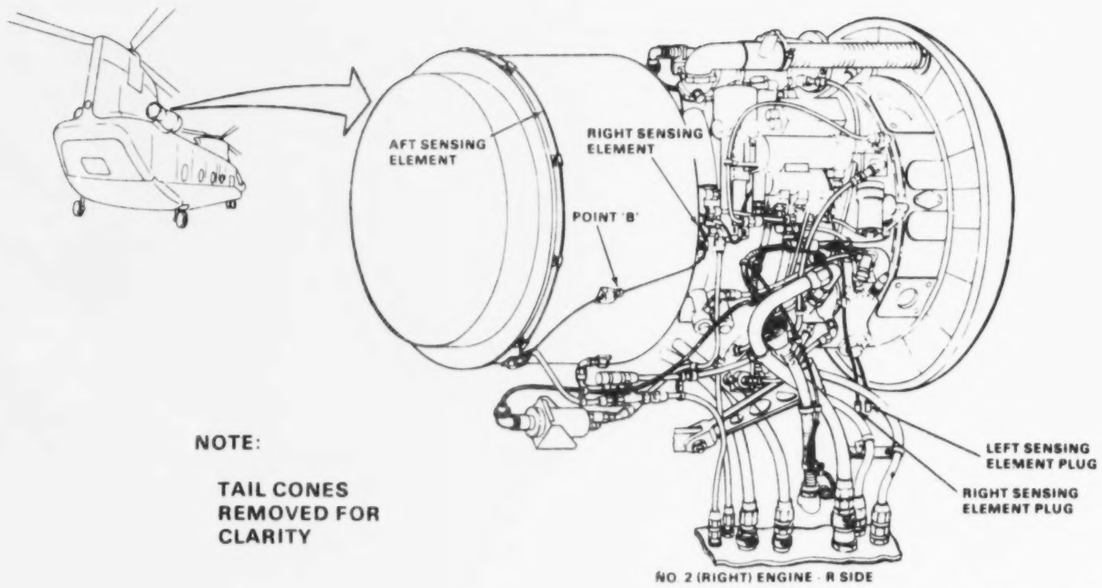
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off



NO. 2 (RIGHT) ENGINE - L SIDE



90x54



NO. 2 (RIGHT) ENGINE - R SIDE

0145-5033-SPA

NOTE:

TAIL CONES REMOVED FOR CLARITY

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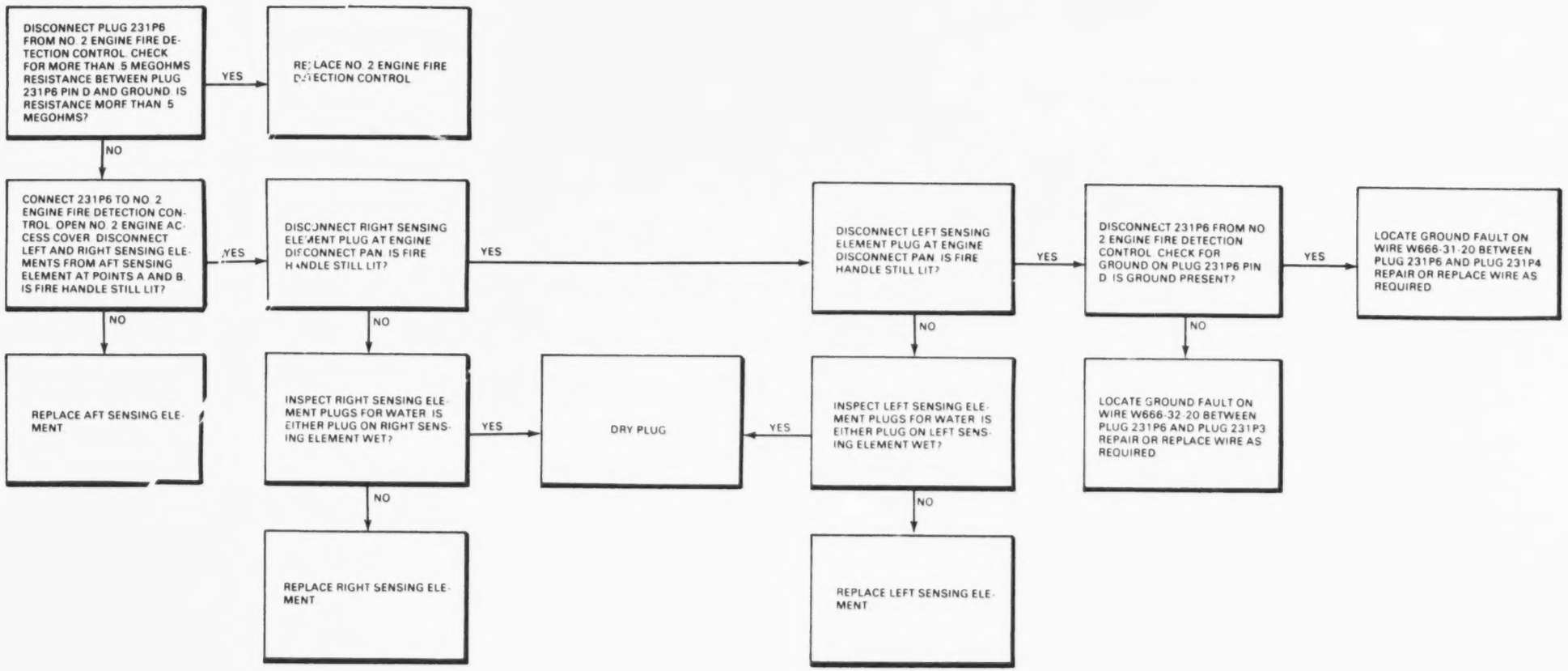
12-2.7 NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION LIT (Continued)


DISCONNECT PLUG 231P6 FROM NO. 2 ENGINE FIRE DETECTION CONTROL. CHECK FOR MORE THAN .5 MEGOHMS RESISTANCE BETWEEN PLUG 231P6 PIN D AND GROUND. IS RESISTANCE MORE THAN .5 MEGOHMS?
YES
REPLACE NO. 2 ENGINE FIRE DETECTION CONTROL
NO
CONNECT 231P6 TO NO. 2 ENGINE FIRE DETECTION CONTROL. OPEN NO. 2 ENGINE ACCESS COVER. DISCONNECT LEFT AND RIGHT SENSING ELEMENTS FROM AFT SENSING ELEMENT AT POINTS A AND B. IS FIRE HANDLE STILL LIT?
YES
DISCONNECT RIGHT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. IS FIRE HANDLE STILL LIT?
YES
DISCONNECT LEFT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. IS FIRE HANDLE STILL LIT?
YES
DISCONNECT 231P6 FROM NO 2 ENGINE FIRE DETECTION CONTROL. CHECK FOR GROUND ON PLUG 231P6 PIN D. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-31-20 BETWEEN PLUG 231P6 AND PLUG 231P4. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE AFT SENSING ELEMENT
NO
INSPECT RIGHT SENSING ELEMENT PLUGS FOR WATER. IS EITHER PLUG ON RIGHT SENSING ELEMENT WET?
YES
DRY PLUG
YES
INSPECT LEFT SENSING ELEMENT PLUGS FOR WATER. IS EITHER PLUG ON LEFT SENSING ELEMENT WET?
NO
LOCATE GROUND FAULT ON WIRE W666-32-20 BETWEEN PLUG 231P6 AND PLUG 231P3. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE RIGHT SENSING ELEMENT
NO
REPLACE LEFT SENSING ELEMENT

END OF TASK

12-2.8 NO. 1 ENGINE AND NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTIONS DO NOT LIGHT DURING TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

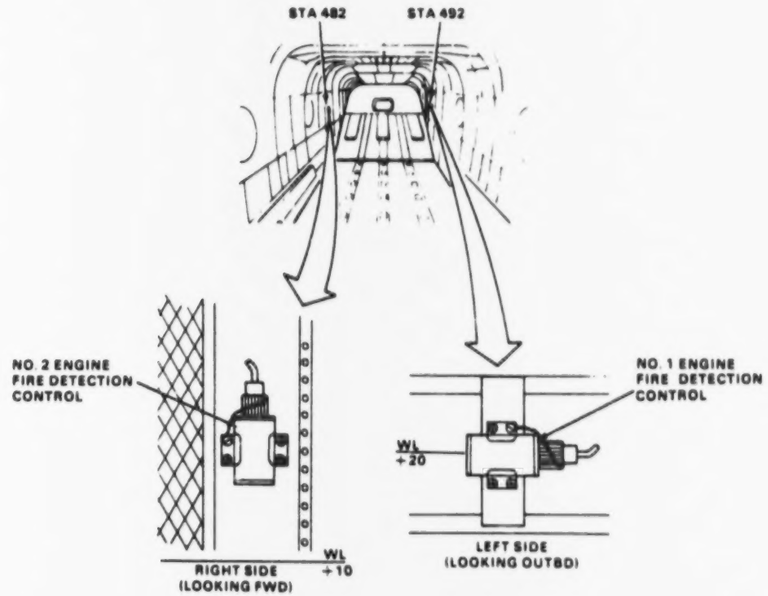
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

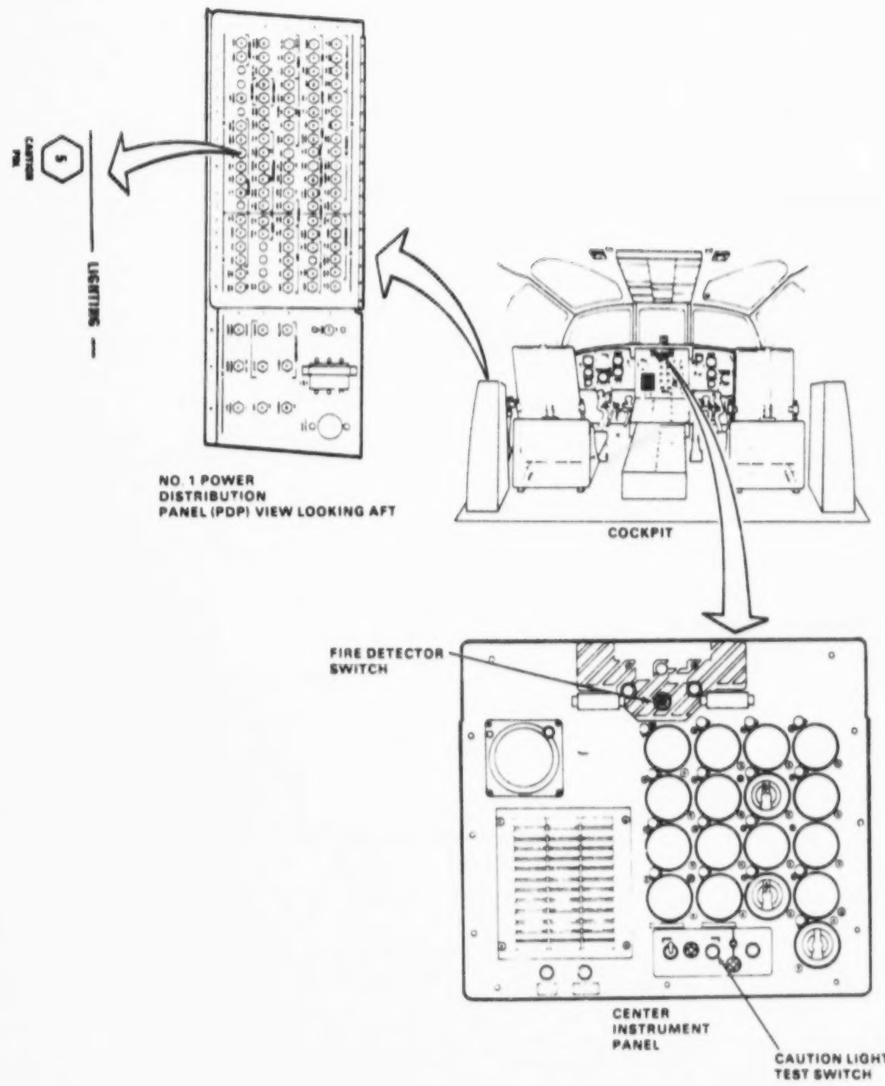
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



90-54



0145-5034-SPA

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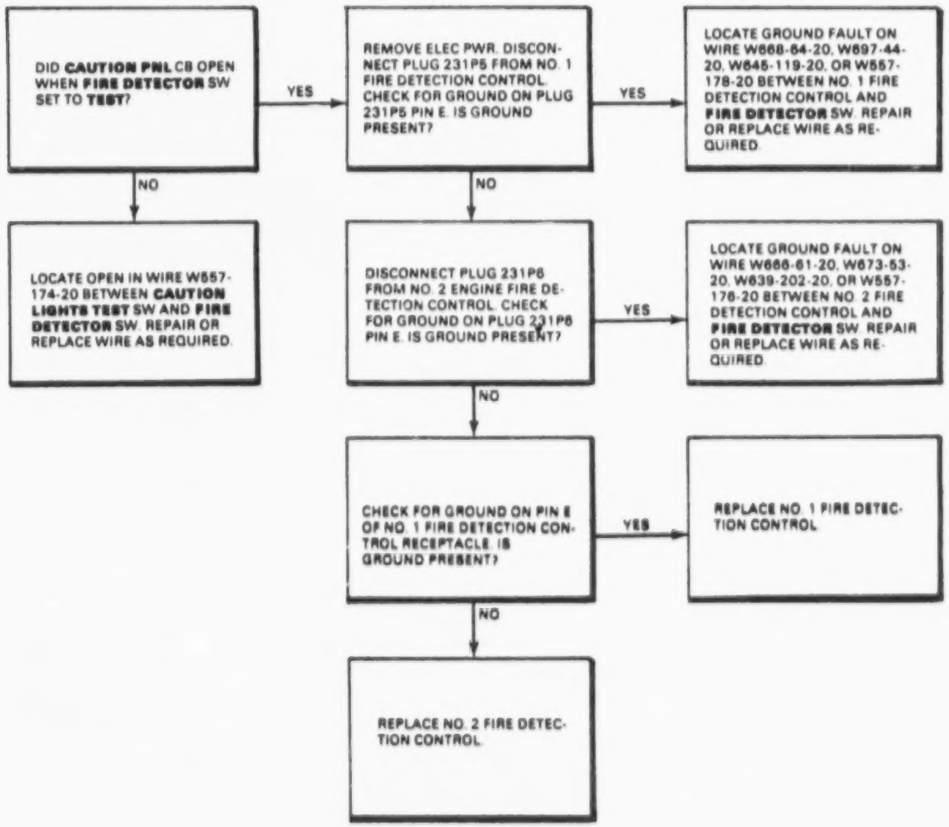
12-2.8 NO. 1 AND NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTIONS DO NOT LIGHT DURING TEST (Continued)


DID CAUTION PNL CB OPEN WHEN FIRE DETECTOR SW SET TO TEST?
YES
REMOVE ELEC PWR. DISCONNECT PLUG 231P5 FROM NO. 1 FIRE DETECTION CONTROL. CHECK FOR GROUND ON PLUG 231P5 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W668-64-20, W697-44-20, W645-119-20, OR W557-178-20 BETWEEN NO. 1 FIRE DETECTION CONTROL AND FIRE DETECTOR SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
NO
LOCATE OPEN IN WIRE W557-174-20 BETWEEN CAUTION LIGHTS TEST SW AND FIRE DETECTOR SW. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 231P6 FROM NO. 2 ENGINE FIRE DETECTION CONTROL. CHECK FOR GROUND ON PLUG 231P6 PIN E. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-61-20, W673-53-20, W639-202-20, OR W557-176-20 BETWEEN NO. 2 FIRE DETECTION CONTROL AND FIRE DETECTOR SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR GROUND ON PIN E OF NO. 1 FIRE DETECTION CONTROL RECEPTACLE. IS GROUND PRESENT?
YES
REPLACE NO. 1 FIRE DETECTION CONTROL
NO
REPLACE NO. 2 FIRE DETECTION CONTROL

END OF TASK

12-2.9 NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

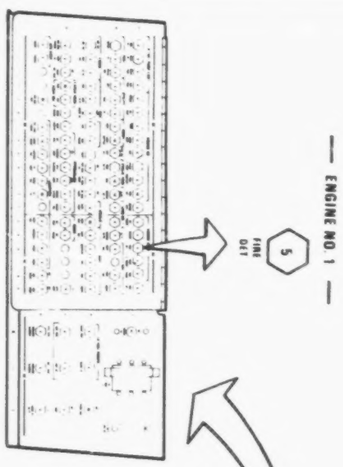
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

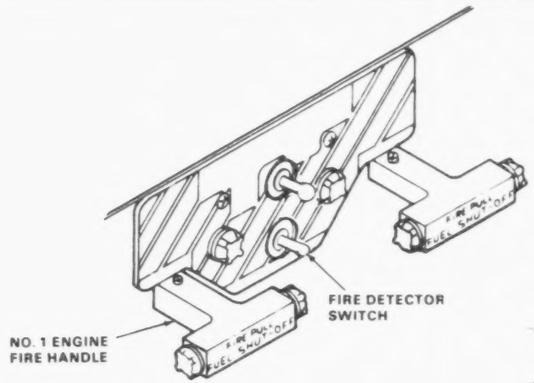
Materials:
None

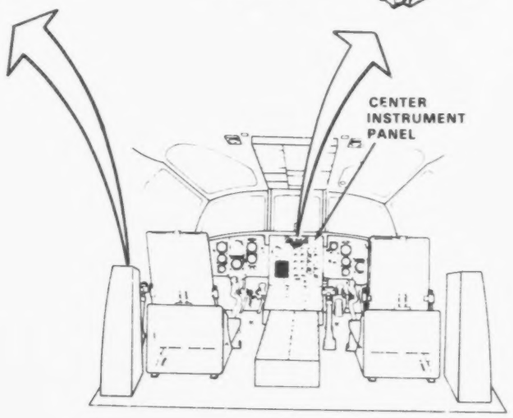
Personnel Required:
68F20 Aircraft Electrician

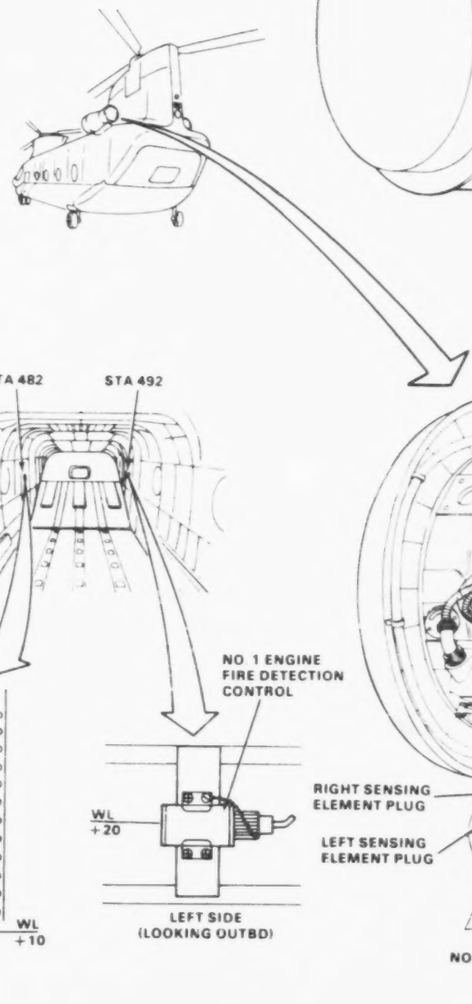
References:
TM 55-1520-240-23

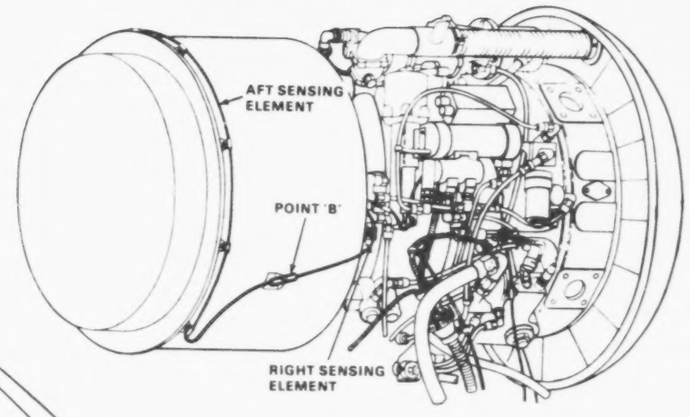
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



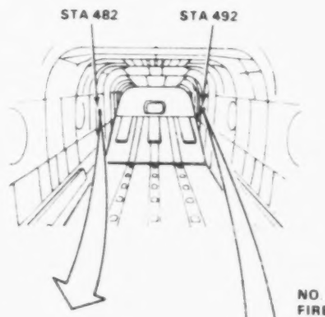


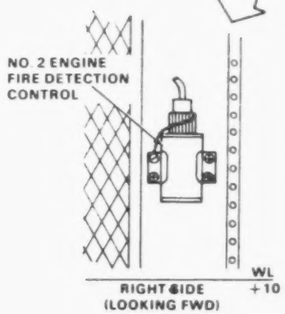


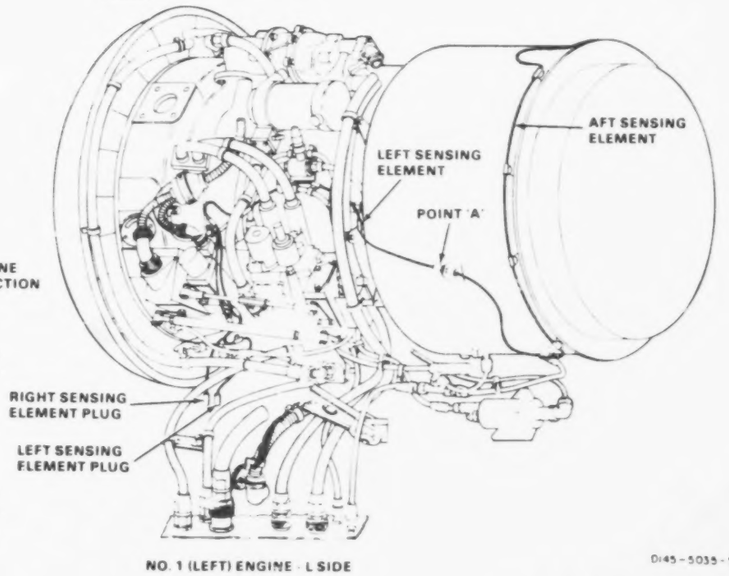




NO. 1 (LEFT) ENGINE - R SIDE







NO. 1 (LEFT) ENGINE - L SIDE

90x54

DI45-5035-SPA

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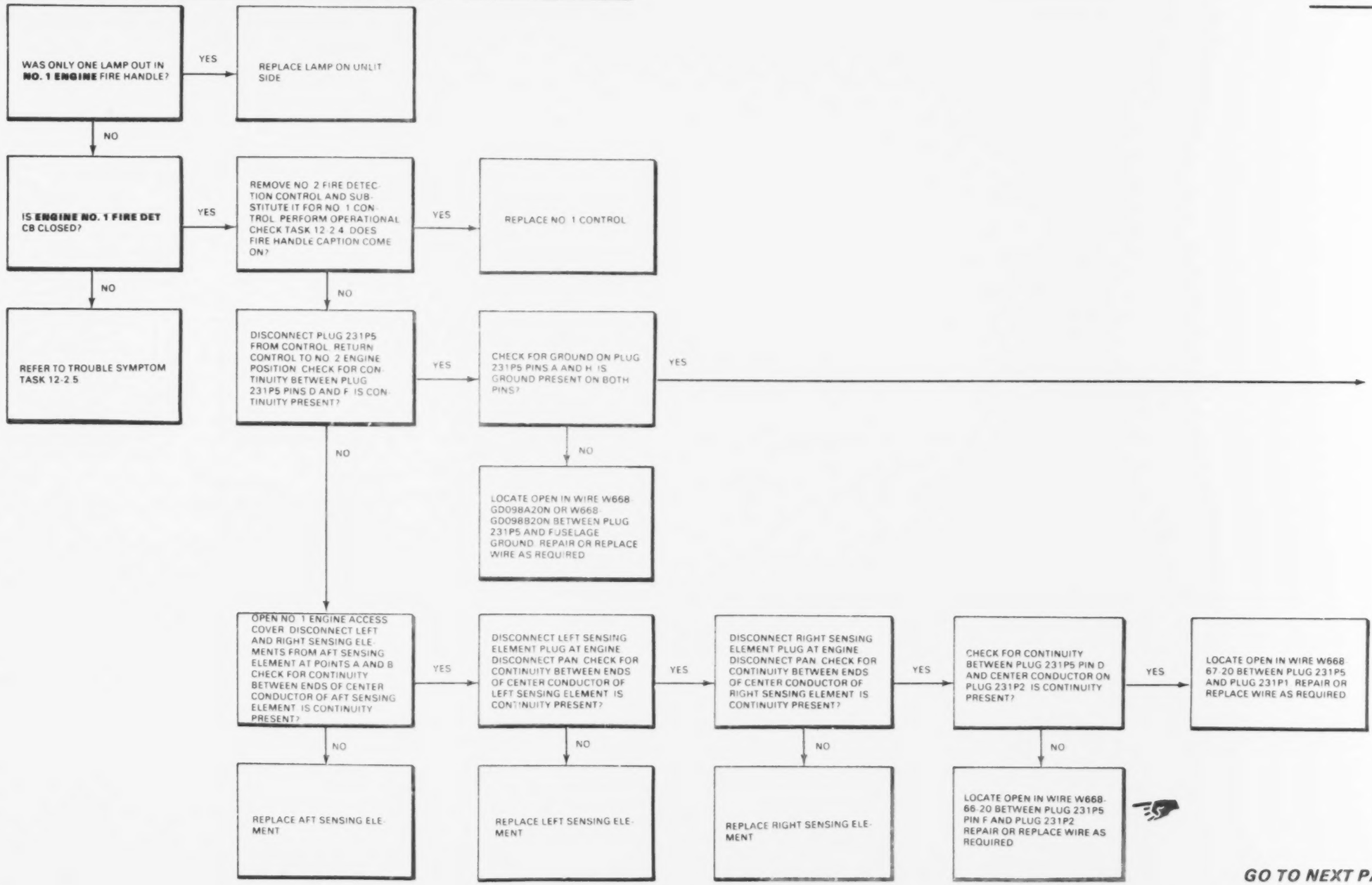
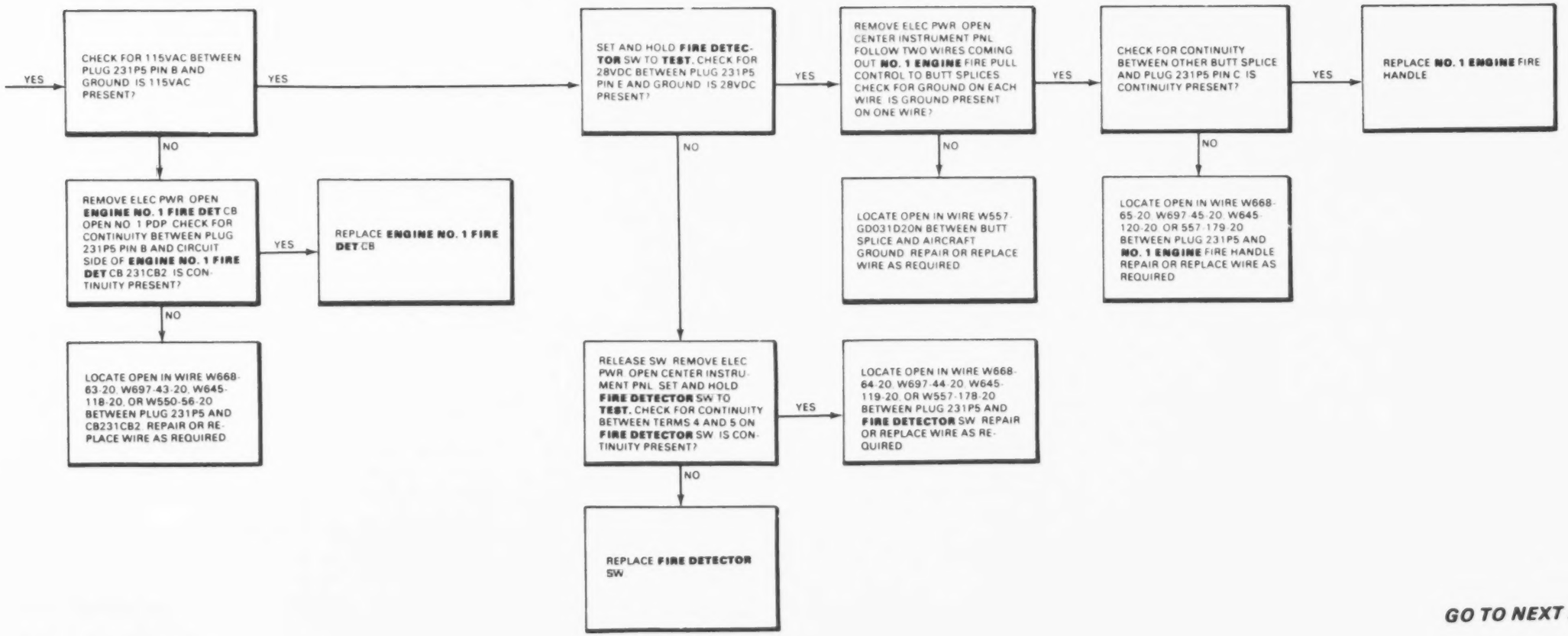
12-2.9 NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST (Continued)


WAS ONLY ONE LAMP OUT IN NO. 1 ENGINE FIRE HANDLE?
YES
REPLACE LAMP ON UNLIT SIDE
NO
IS ENGINE NO. 1 FIRE DET CB CLOSED?
YES
REMOVE NO. 2 FIRE DETECTION CONTROL AND SUBSTITUTE IT FOR NO. 1 CONTROL. PERFORM OPERATIONAL CHECK TASK 12-2-4. DOES FIRE HANDLE CAPTION COME ON?
YES
REPLACE NO. 1 CONTROL
NO
REFER TO TROUBLE SYMPTOM TASK 12-2-5
DISCONNECT PLUG 231P5 FROM CONTROL. RETURN CONTROL TO NO. 2 ENGINE POSITION. CHECK FOR CONTINUITY BETWEEN PLUG 231P5 PINS D AND F. IS CONTINUITY PRESENT?
YES
CHECK FOR GROUND ON PLUG 231P5 PINS A AND H. IS GROUND PRESENT ON BOTH PINS?
YES
NO
LOCATE OPEN IN WIRE W668-GD098A20N OR W668-GD098B20N BETWEEN PLUG 231P5 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
NO
OPEN NO. 1 ENGINE ACCESS COVER. DISCONNECT LEFT AND RIGHT SENSING ELEMENTS FROM AFT SENSING ELEMENT AT POINTS A AND B. CHECK FOR CONTINUITY BETWEEN ENDS OF CENTER CONDUCTOR OF AFT SENSING ELEMENT. IS CONTINUITY PRESENT?
YES
DISCONNECT LEFT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. CHECK FOR CONTINUITY BETWEEN ENDS OF CENTER CONDUCTOR OF LEFT SENSING ELEMENT. IS CONTINUITY PRESENT?
YES
DISCONNECT RIGHT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. CHECK FOR CONTINUITY BETWEEN ENDS OF CENTER CONDUCTOR OF RIGHT SENSING ELEMENT. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 231P5 PIN D AND CENTER CONDUCTOR ON PLUG 231P2. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W668-67-20 BETWEEN PLUG 231P5 AND PLUG 231P1. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
NO
NO
REPLACE AFT SENSING ELEMENT
REPLACE LEFT SENSING ELEMENT
REPLACE RIGHT SENSING ELEMENT
LOCATE OPEN IN WIRE W668-66-20 BETWEEN PLUG 231P5 PIN F AND PLUG 231P2. REPAIR OR REPLACE WIRE AS REQUIRED

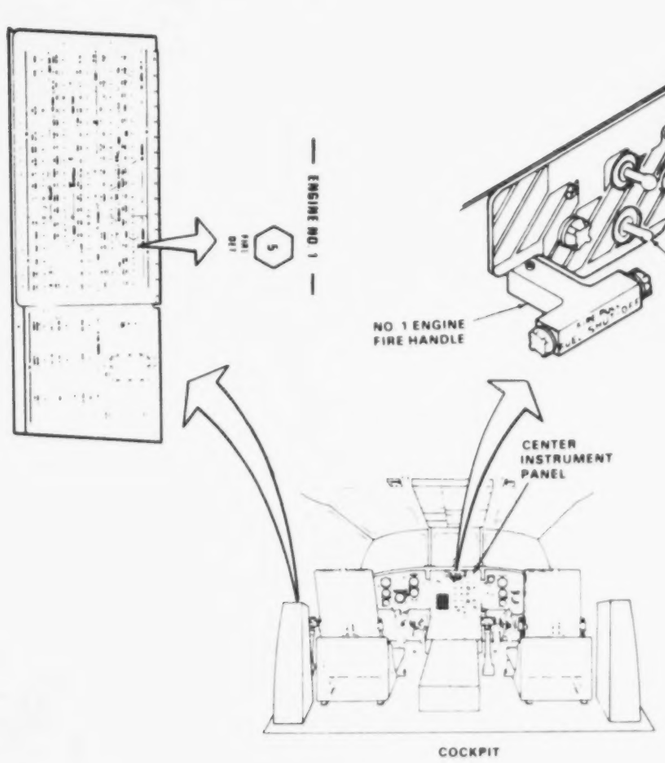
GO TO NEXT PAGE

12-2.9 NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST (Continued)

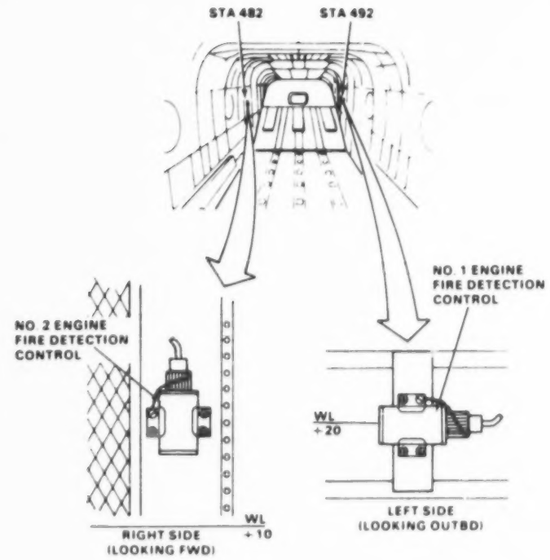

YES
CHECK FOR 115VAC BETWEEN PLUG 231P5 PIN B AND GROUND IS 115VAC PRESENT?
YES
SET AND HOLD **FIRE DETECTOR** SW TO **TEST**. CHECK FOR 28VDC BETWEEN PLUG 231P5 PIN E AND GROUND IS 28VDC PRESENT?
YES
REMOVE ELEC PWR OPEN CENTER INSTRUMENT PNL FOLLOW TWO WIRES COMING OUT **NO. 1 ENGINE** FIRE PULL CONTROL TO BUTT SPLICES CHECK FOR GROUND ON EACH WIRE IS GROUND PRESENT ON ONE WIRE?
YES
CHECK FOR CONTINUITY BETWEEN OTHER BUTT SPLICE AND PLUG 231P5 PIN C IS CONTINUITY PRESENT?
YES
REPLACE **NO. 1 ENGINE** FIRE HANDLE
NO
REMOVE ELEC PWR OPEN **ENGINE NO. 1 FIRE DET** CB OPEN NO 1 PDP CHECK FOR CONTINUITY BETWEEN PLUG 231P5 PIN B AND CIRCUIT SIDE OF **ENGINE NO. 1 FIRE DET** CB 231CB2 IS CONTINUITY PRESENT?
YES
REPLACE **ENGINE NO. 1 FIRE DET** CB
NO
LOCATE OPEN IN WIRE W668-63-20, W697-43-20, W645-118-20, OR W550-56-20 BETWEEN PLUG 231P5 AND CB231CB2 REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W557-GD031D20N BETWEEN BUTT SPLICE AND AIRCRAFT GROUND REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W668-65-20, W697-45-20, W645-120-20, OR 557-179-20 BETWEEN PLUG 231P5 AND **NO. 1 ENGINE** FIRE HANDLE REPAIR OR REPLACE WIRE AS REQUIRED
NO
RELEASE SW REMOVE ELEC PWR OPEN CENTER INSTRUMENT PNL SET AND HOLD **FIRE DETECTOR** SW TO **TEST**. CHECK FOR CONTINUITY BETWEEN TERMS 4 AND 5 ON **FIRE DETECTOR** SW IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W668-64-20, W697-44-20, W645-119-20, OR W557-178-20 BETWEEN PLUG 231P5 AND **FIRE DETECTOR** SW REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE **FIRE DETECTOR** SW

GO TO NEXT PAGE

12-2.9 NO. 1 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST (Continued)



69X54



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END OF TASK

12-2.10 NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

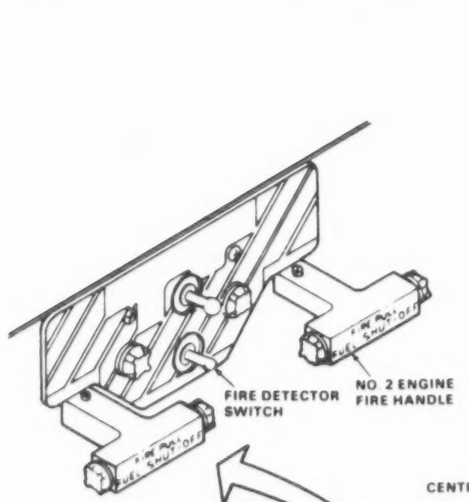
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

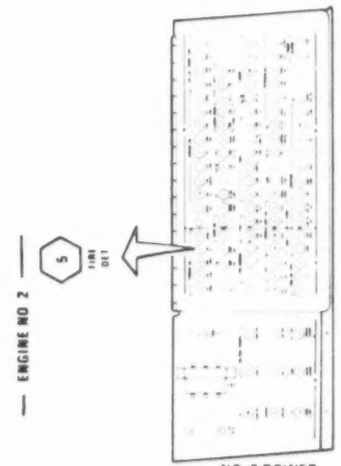
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

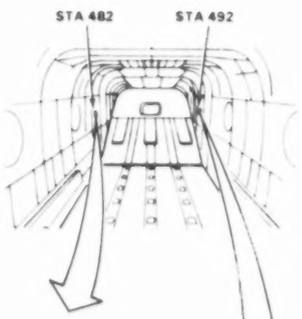
References:
TM 55-1520-240-23

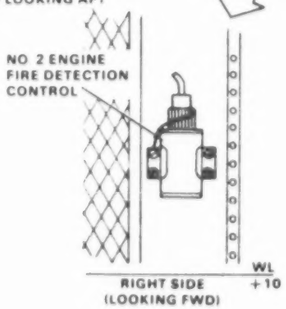
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off

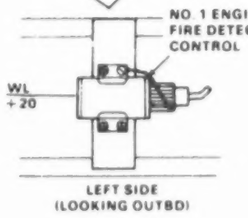


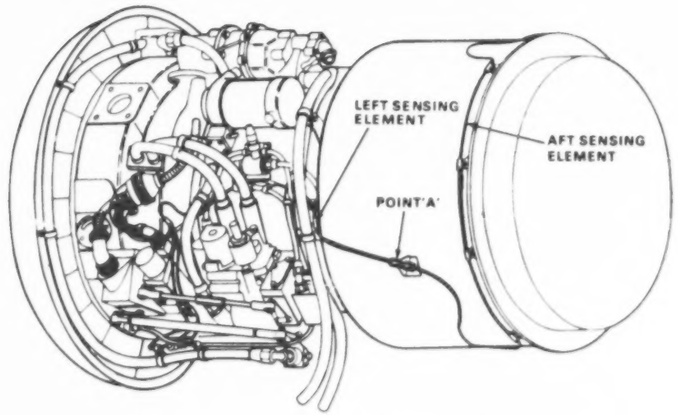


NO 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

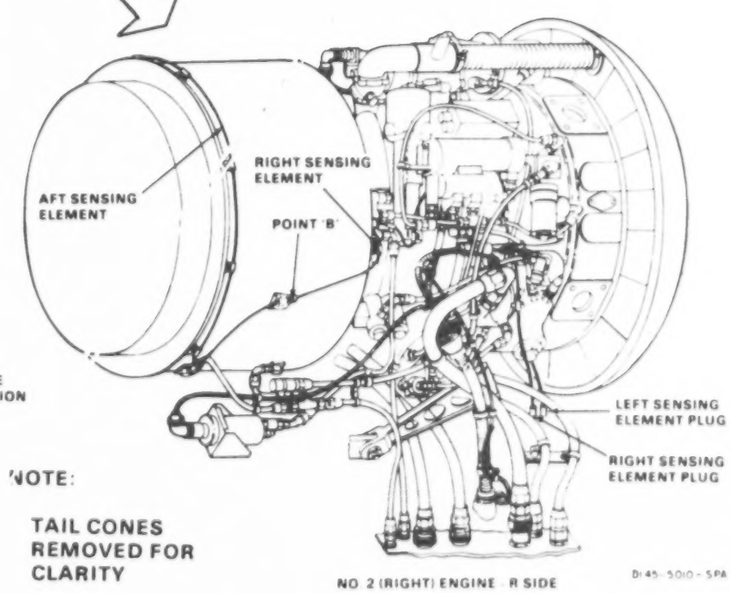








NO. 2 (RIGHT) ENGINE - L SIDE



NO. 2 (RIGHT) ENGINE - R SIDE

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NOTE:

TAIL CONES REMOVED FOR CLARITY

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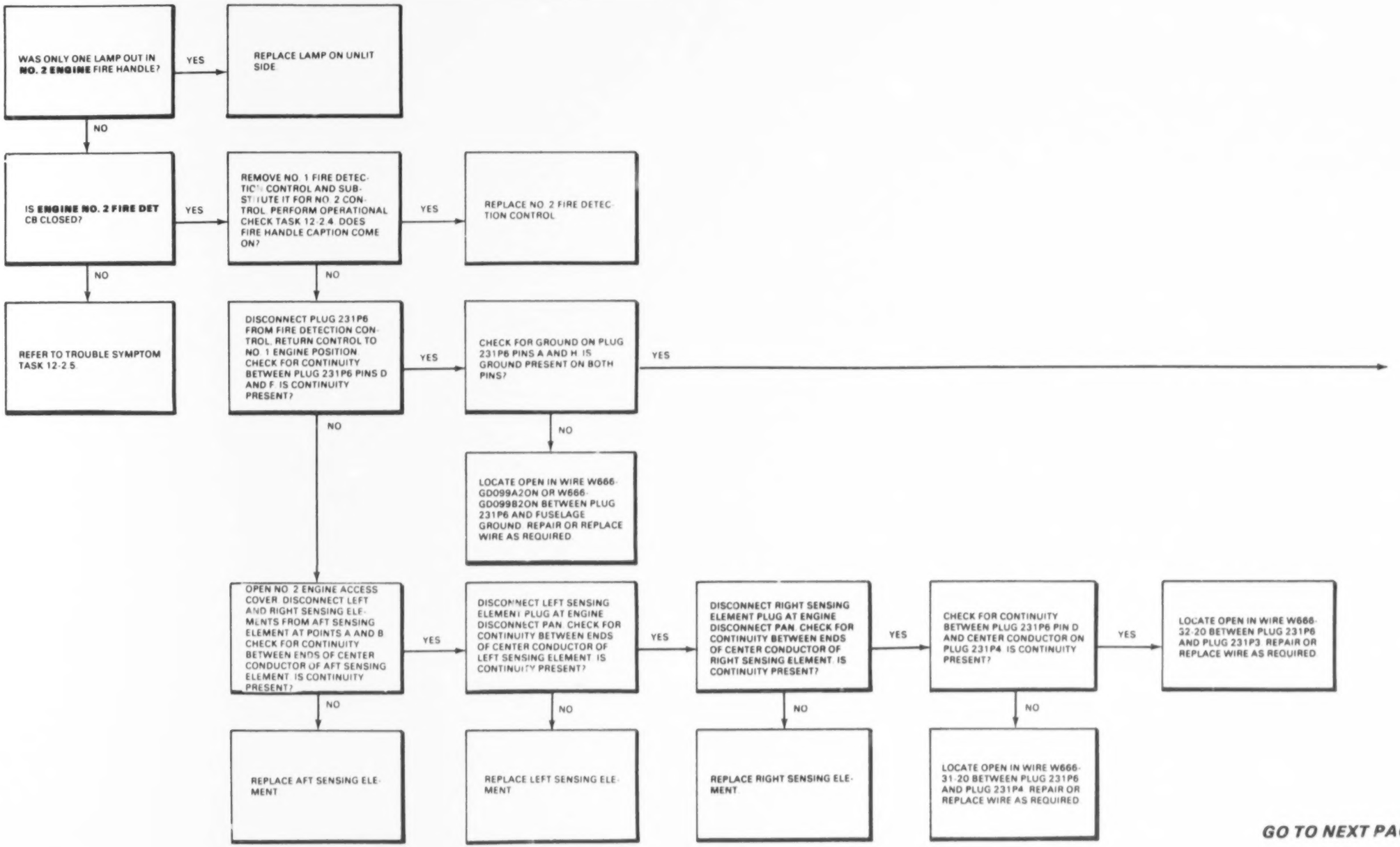
12-2.10 NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST (Continued)


WAS ONLY ONE LAMP OUT IN NO. 2 ENGINE FIRE HANDLE?
YES
REPLACE LAMP ON UNLIT SIDE
NO
IS ENGINE NO. 2 FIRE DET CB CLOSED?
YES
REMOVE NO. 1 FIRE DETECTION CONTROL AND SUBSTITUTE IT FOR NO. 2 CONTROL. PERFORM OPERATIONAL CHECK TASK 12-2-4. DOES FIRE HANDLE CAPTION COME ON?
YES
REPLACE NO. 2 FIRE DETECTION CONTROL
NO
REFER TO TROUBLE SYMPTOM TASK 12-2.5.
NO
DISCONNECT PLUG 231P6 FROM FIRE DETECTION CONTROL. RETURN CONTROL TO NO. 1 ENGINE POSITION. CHECK FOR CONTINUITY BETWEEN PLUG 231P6 PINS D AND F. IS CONTINUITY PRESENT?
YES
CHECK FOR GROUND ON PLUG 231P6 PINS A AND H. IS GROUND PRESENT ON BOTH PINS?
YES
NO
LOCATE OPEN IN WIRE W666-GD099A2ON OR W666-GD099B2ON BETWEEN PLUG 231P6 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN NO. 2 ENGINE ACCESS COVER. DISCONNECT LEFT AND RIGHT SENSING ELEMENTS FROM AFT SENSING ELEMENT AT POINTS A AND B. CHECK FOR CONTINUITY BETWEEN ENDS OF CENTER CONDUCTOR OF AFT SENSING ELEMENT. IS CONTINUITY PRESENT?
YES
DISCONNECT LEFT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. CHECK FOR CONTINUITY BETWEEN ENDS OF CENTER CONDUCTOR OF LEFT SENSING ELEMENT. IS CONTINUITY PRESENT?
YES
DISCONNECT RIGHT SENSING ELEMENT PLUG AT ENGINE DISCONNECT PAN. CHECK FOR CONTINUITY BETWEEN ENDS OF CENTER CONDUCTOR OF RIGHT SENSING ELEMENT. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN PLUG 231P6 PIN D AND CENTER CONDUCTOR ON PLUG 231P4. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W666-32-20 BETWEEN PLUG 231P6 AND PLUG 231P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE AFT SENSING ELEMENT.
NO
REPLACE LEFT SENSING ELEMENT.
NO
REPLACE RIGHT SENSING ELEMENT.
NO
LOCATE OPEN IN WIRE W666-31-20 BETWEEN PLUG 231P6 AND PLUG 231P4. REPAIR OR REPLACE WIRE AS REQUIRED.

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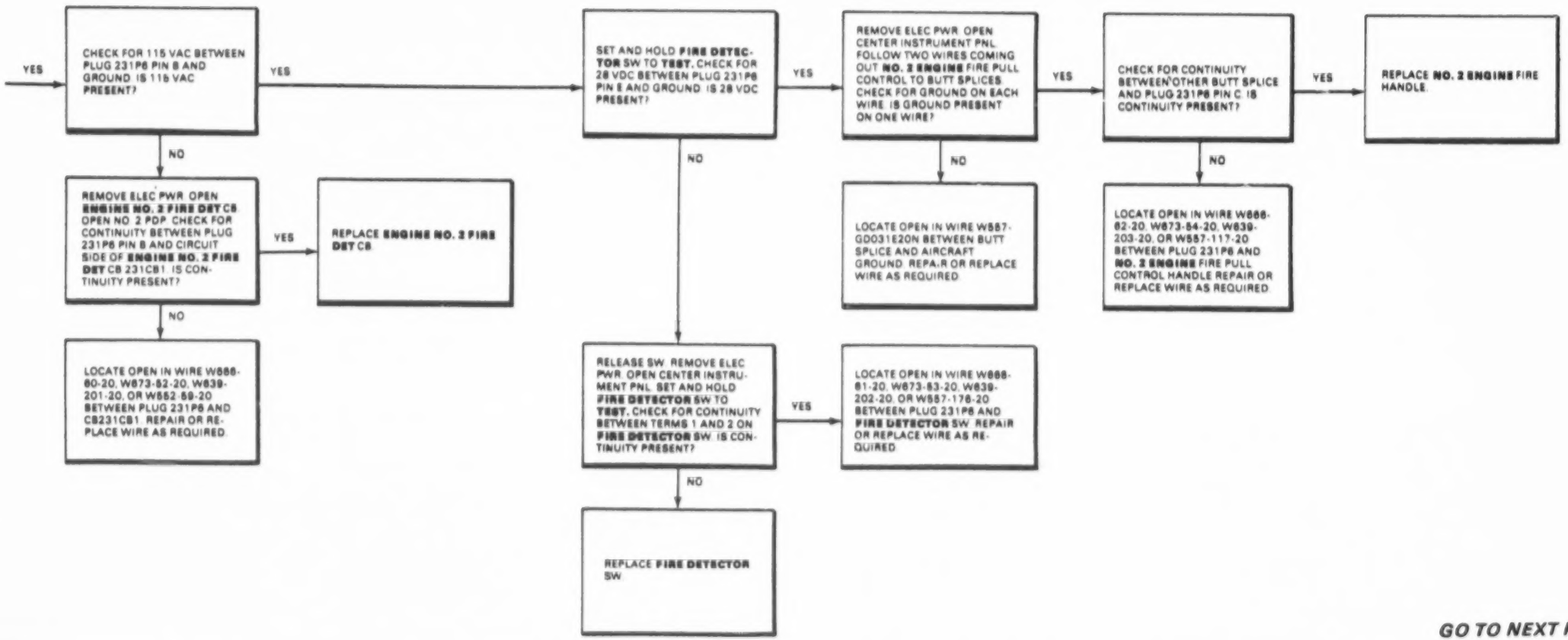
12-2.10 NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST (Continued)


YES
CHECK FOR 115 VAC BETWEEN PLUG 231P6 PIN B AND GROUND. IS 115 VAC PRESENT?
YES
NO
REMOVE ELEC PWR. OPEN ENGINE NO. 2 FIRE DET CB. OPEN NO. 2 PDP. CHECK FOR CONTINUITY BETWEEN PLUG 231P6 PIN B AND CIRCUIT SIDE OF ENGINE NO. 2 FIRE DET CB 231CB1. IS CONTINUITY PRESENT?
YES
REPLACE ENGINE NO. 2 FIRE DET CB
NO
LOCATE OPEN IN WIRE W666-60-20, W673-52-20, W639-201-20, OR W552-59-20 BETWEEN PLUG 231P6 AND CB231CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
SET AND HOLD FIRE DETECTOR SW TO TEST. CHECK FOR 28 VDC BETWEEN PLUG 231P6 PIN E AND GROUND. IS 28 VDC PRESENT?
YES
NO
RELEASE SW. REMOVE ELEC PWR. OPEN CENTER INSTRUMENT PNL. SET AND HOLD FIRE DETECTOR SW TO TEST. CHECK FOR CONTINUITY BETWEEN TERMS 1 AND 2 ON FIRE DETECTOR SW. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W666-61-20, W673-53-20, W639-202-20, OR W557-176-20 BETWEEN PLUG 231P6 AND FIRE DETECTOR SW. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE FIRE DETECTOR SW
REMOVE ELEC PWR. OPEN CENTER INSTRUMENT PNL. FOLLOW TWO WIRES COMING OUT NO. 2 ENGINE FIRE PULL CONTROL TO BUTT SPLICES. CHECK FOR GROUND ON EACH WIRE. IS GROUND PRESENT ON ONE WIRE?
YES
NO
LOCATE OPEN IN WIRE W557-G0031E20N BETWEEN BUTT SPLICE AND AIRCRAFT GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
CHECK FOR CONTINUITY BETWEEN OTHER BUTT SPLICE AND PLUG 231P6 PIN C. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W666-62-20, W673-54-20, W639-203-20, OR W557-117-20 BETWEEN PLUG 231P6 AND NO. 2 ENGINE FIRE PULL CONTROL HANDLE REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE NO. 2 ENGINE FIRE HANDLE.

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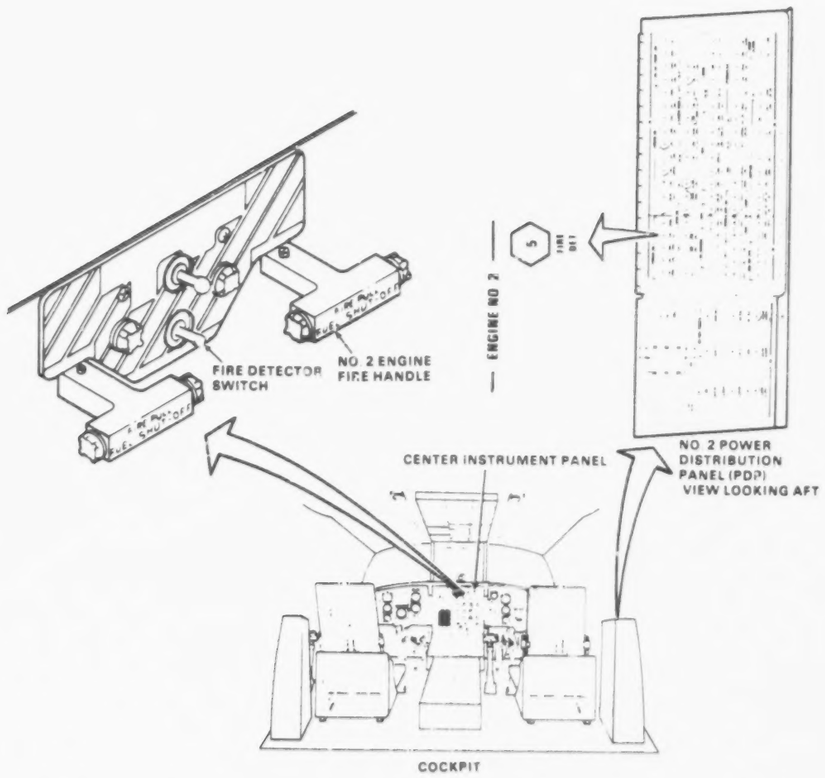
12-2.10 NO. 2 ENGINE FIRE HANDLE FIRE PULL/FUEL SHUTOFF CAPTION DOES NOT LIGHT DURING TEST (Continued)



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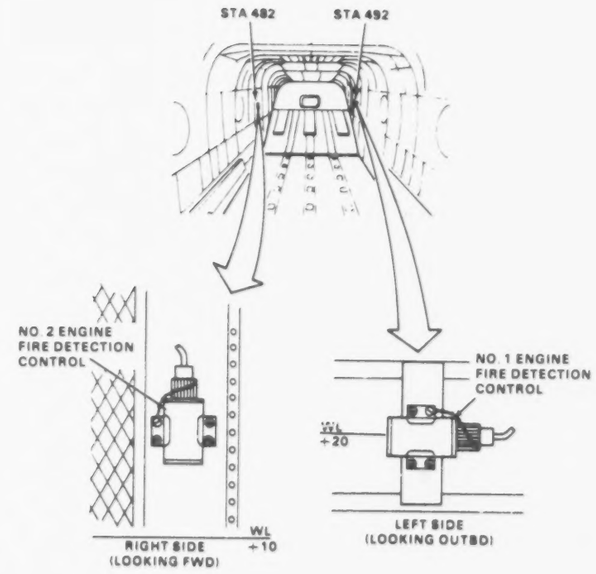

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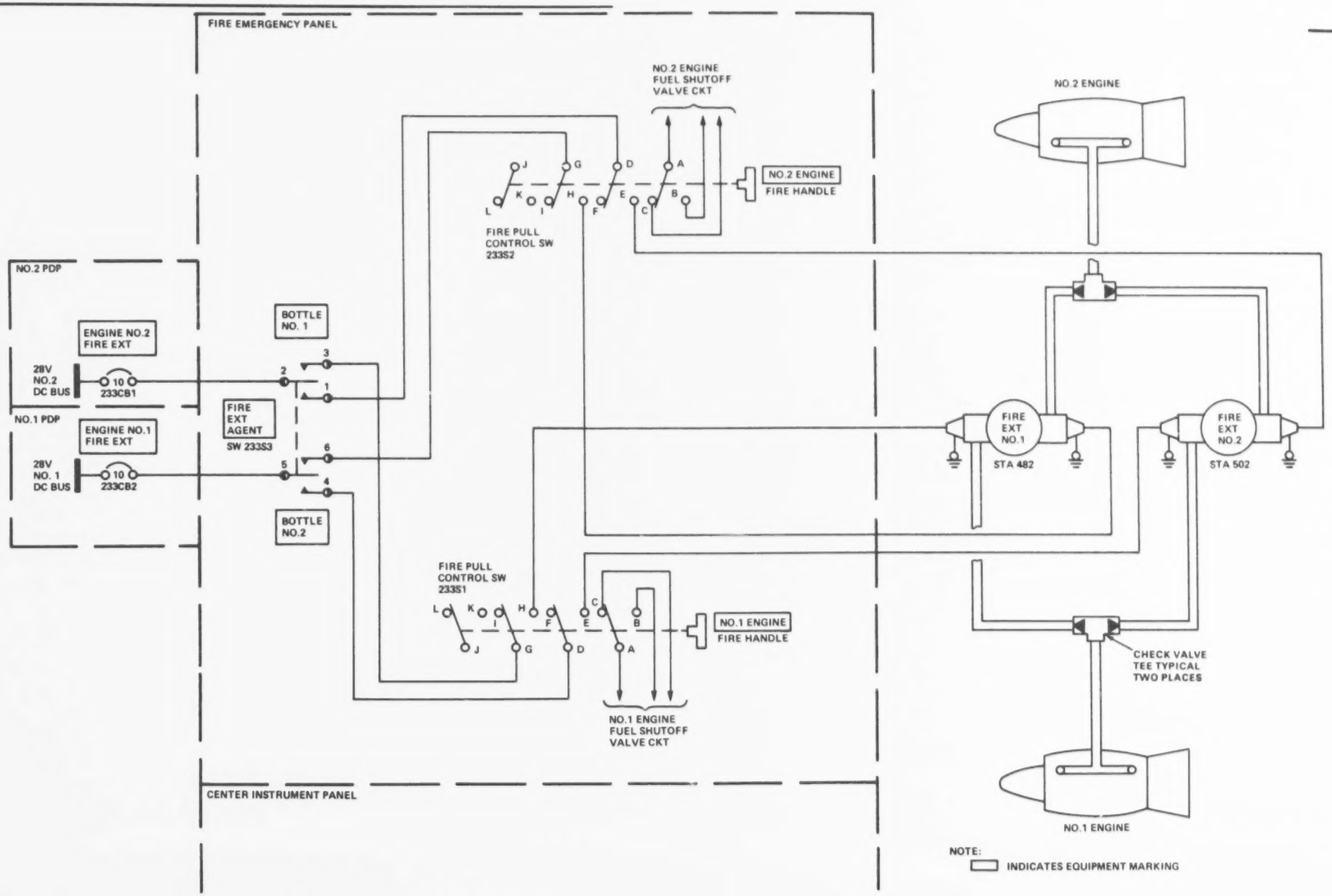
END OF TASK

12-3 FIRE EXTINGUISHING SYSTEM

12-3 FIRE EXTINGUISHING SYSTEM

12-3.1 FIRE EXTINGUISHING SYSTEM SCHEMATIC DIAGRAM



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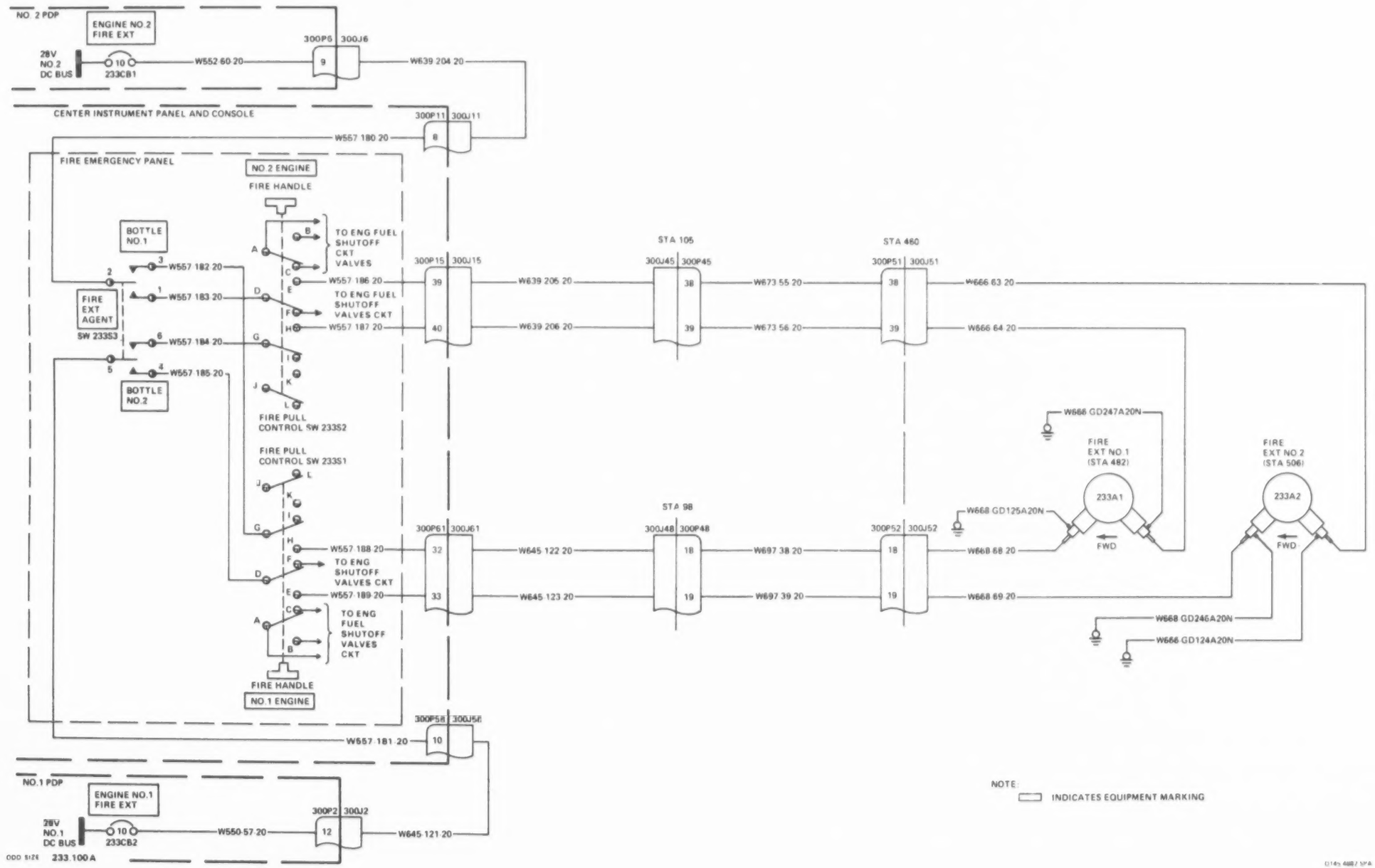
12-3.2 FIRE EXTINGUISHING SYSTEM WIRING DIAGRAM



12-3.3 FIRE EXTINGUISHING SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23

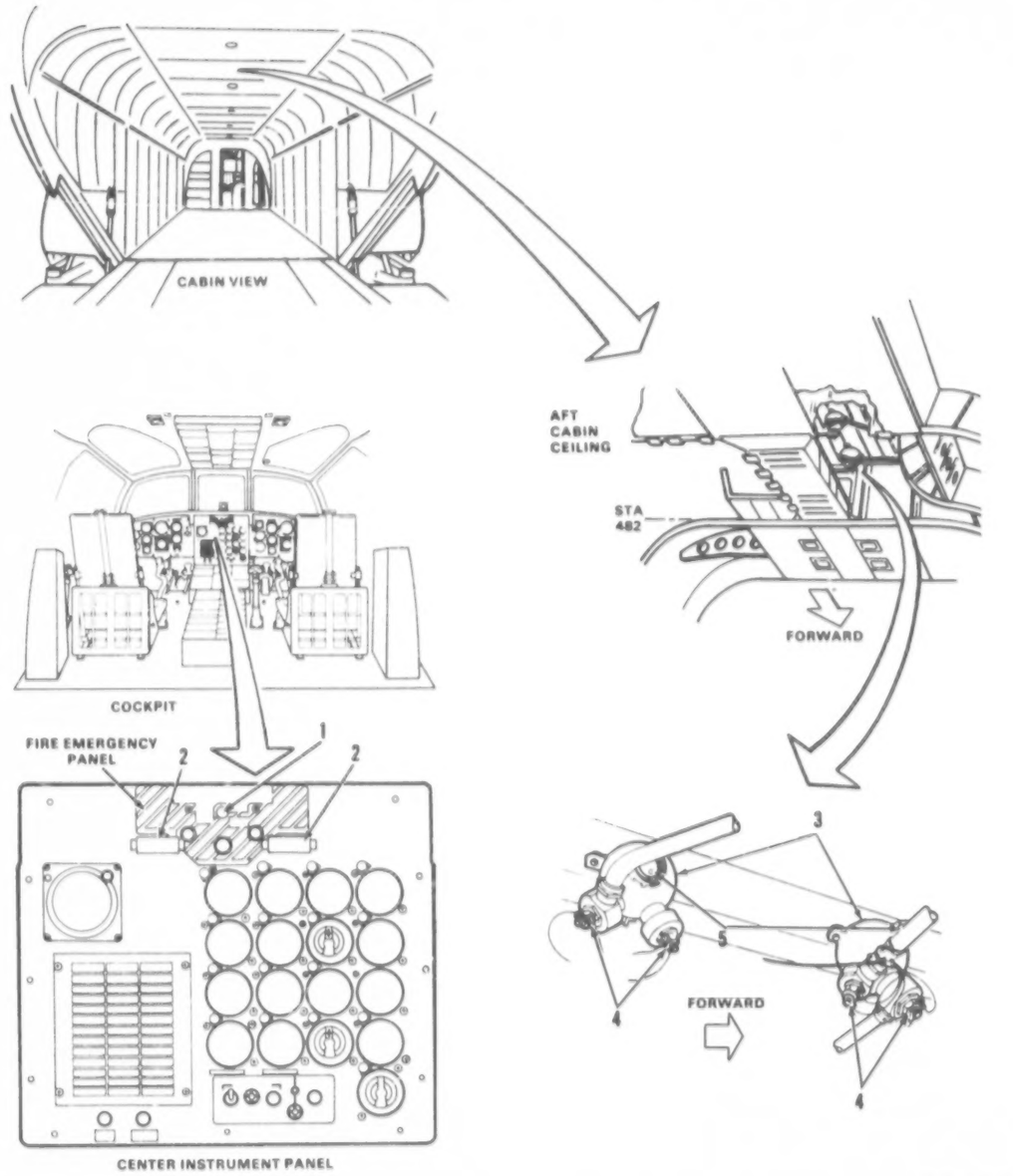
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

TASK	RESULT
1. **Check FIRE EXT AGENT switch (1).**	If switch (1) is loose or damaged, tighten or replace it as required.
2. **Check NO. 1 ENGINE and NO. 2 ENGINE fire handles (2).**	If either fire handle (2) is loose or damaged, tighten or replace it as required.
3. **Check fire extinguisher (3).**	If either fire extinguisher (3) is loose, tighten it. If wiring to cartridges (4) is damaged, repair or replace it as required.
4. **Read gage (5)** on each fire extinguisher (3).	If either gage (5) pressure reading is below following limits, replace fire bottle.

Temperature	*Pressure*
-40°C (-40°F)	292—370 psi
-29°C (-20°F)	320—400 psi
-18°C (0°F)	355—437 psi
-7°C (19°F)	396—486 psi
4°C (39°F)	449—540 psi
15°C (59°F)	518—618 psi
27°C (81°F)	593—702 psi
30°C (100°F)	691—784 psi
52°C (126°F)	785—902 psi

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-3.4 FIRE EXTINGUISHING SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

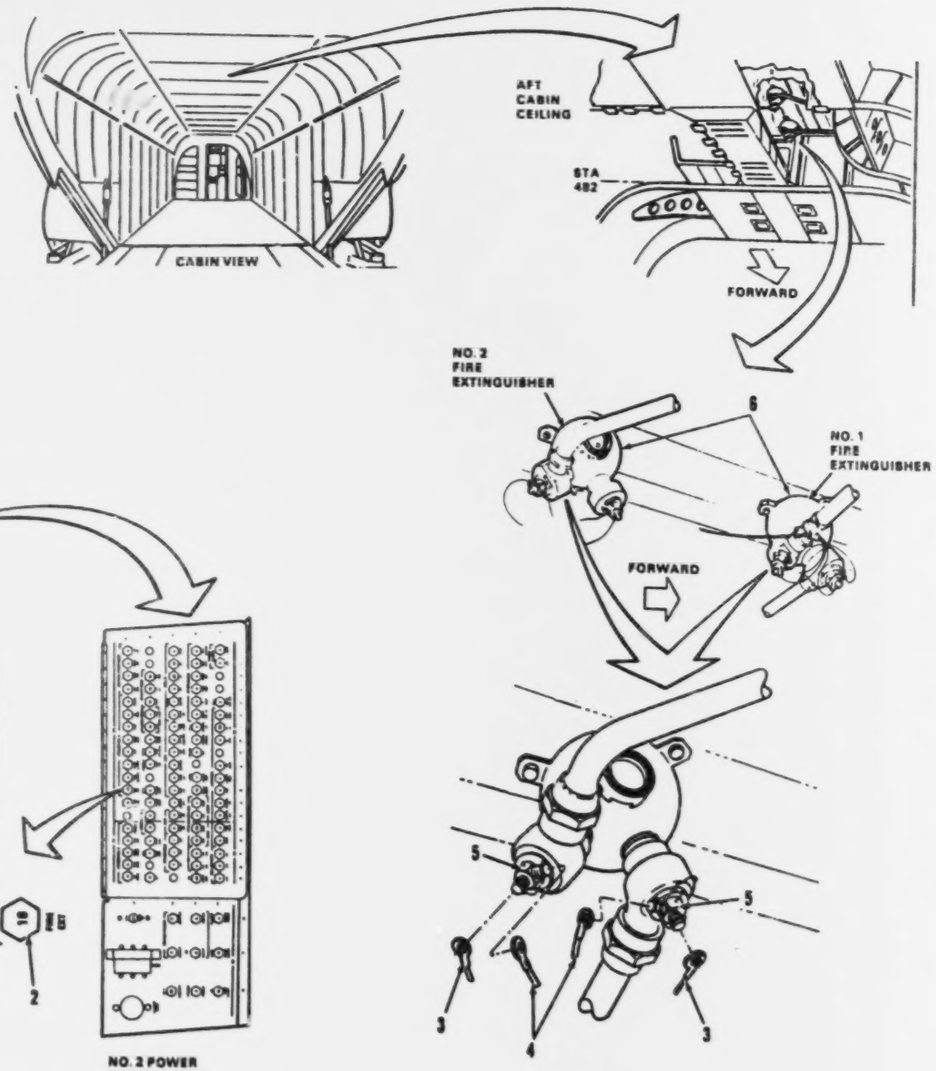
Tools:
Multimeter

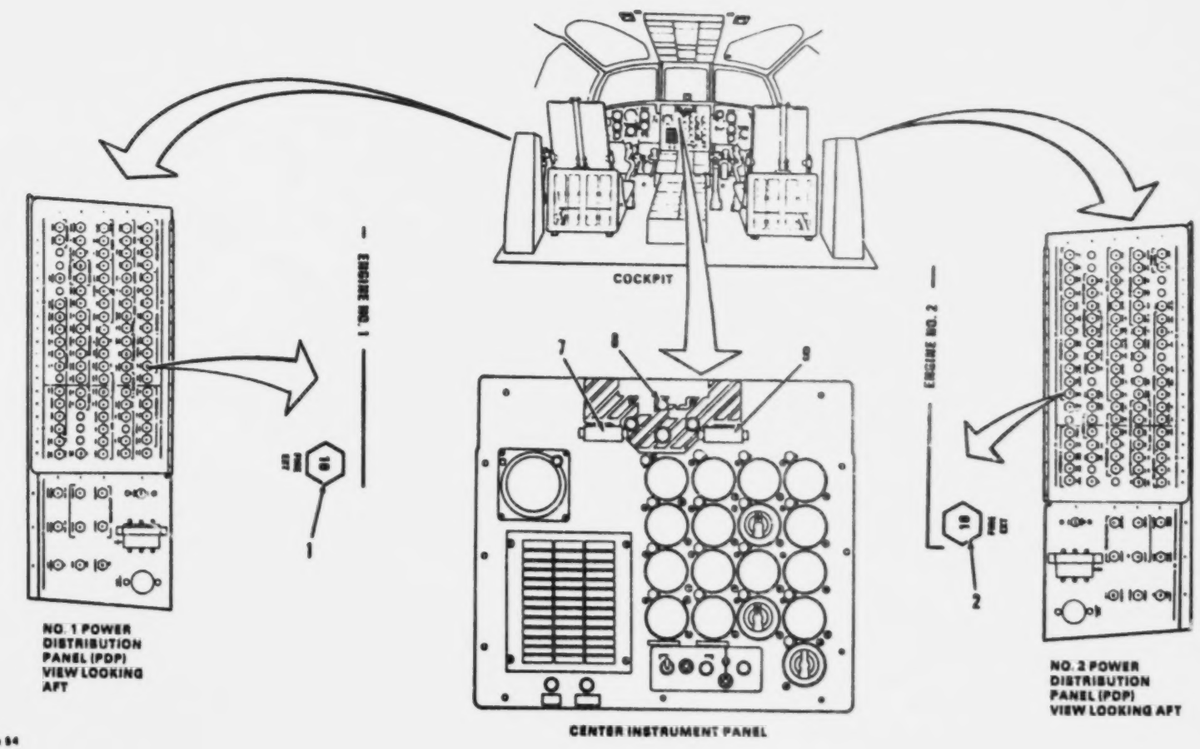
Materials:
Paper Tags (E264)

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





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12-3.4 FIRE EXTINGUISHING SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
1. **Check** that **ENGINE NO. 1 FIRE EXT circuit breaker (1)** is closed.	If FIRE EXT circuit breaker (1) is open, close it. If it opens again, go to task 12-3.5.
2. **Check** that **ENGINE NO. 2 FIRE EXT circuit breaker (2)** is closed.	If FIRE EXT circuit breaker (2) is open, close it. If it opens again, go to task 12-3.5.
3. Tag and **disconnect two wires (3 and 4)** from each cartridge (5) on fire extinguishers (6).	
CAUTION **Make sure wire terminal lugs do not touch cartridge terminals or fuselage. Aircraft damage or fire extinguisher discharge could occur.**	
CAUTION **Do not connect multimeter to cartridge. This could discharge extinguisher agent or reduce cartridge life.**	
4. **Connect multimeter, set to measure 28 VDC, between wires W668-68-20 (+) and W668-GD125A20N (-)** at forward cartridge (5) on No. 1 fire extinguisher (6).	
5. **Pull out NO. 1 ENGINE fire handle (7).**	
6. **Set and hold FIRE EXT AGENT switch (8) to BOTTLE NO. 1.**	Multimeter shall indicate 28 VDC. If not, go to task 12-3.6. If voltage is present and trouble symptom, Fire extinguisher No. 1 did not discharge on No. 1 engine, was reported, replace forward cartridge (5) on No. 1 fire extinguisher (6).
7. **Release FIRE EXT AGENT switch (8).**	
8. **Disconnect multimeter. Connect multimeter to wires W668-69-20 (+) and W668-GD246A20N (-)** at forward cartridge (5) on No. 2 fire extinguisher (6).	
9. **Set and hold FIRE EXT AGENT switch (8) to BOTTLE NO. 2.**	Multimeter shall indicate 28 VDC. If not, go to task 12-3.7. If voltage is present and trouble symptom, Fire extinguisher No. 2 did not discharge on No. 2 engine, was reported, replace forward cartridge (5) on No. 2 fire extinguisher (6).
10. **Release FIRE EXT AGENT switch (8).**	
11. **Push in NO. 1 ENGINE fire handle (7).**	
12. **Pull out NO. 2 ENGINE fire handle (9).**	
13. **Disconnect multimeter. Connect multimeter to wires W666-64-20 (+) and W666-GD247A20N** at aft cartridge (5) on No. 1 fire extinguisher (6).	
14. **Set and hold FIRE EXT AGENT switch (8) to BOTTLE NO. 1.**	Multimeter shall indicate 28 VDC. If not, go to task 12-3.8. If voltage is present and trouble symptom, Fire extinguisher No. 1 did not discharge on No. 1 engine, was reported, replace aft cartridge (5) on No. 1 fire extinguisher (6).
15. **Release FIRE EXT AGENT switch (8).**	
16. **Disconnect multimeter. Connect multimeter to wire W666-63-20 (+) and W666-GD124A20N** at aft cartridge (5) on No. 2 fire extinguisher (6).	
17. **Set and hold FIRE EXT AGENT switch (8) to BOTTLE NO. 2.**	Multimeter shall indicate 28 VDC. If not, go to task 12-3.9. If voltage is present and trouble symptom, Fire extinguisher No. 2 did not discharge on No. 2 engine, was reported, replace aft cartridge (5) on No. 2 fire extinguisher (6).
18. **Release FIRE EXT AGENT switch (8).**	
19. **Push in NO. 2 ENGINE fire handle (9).**	
CAUTION **Insure wires are connected to right terminals on cartridge. Reverse connections will prevent agent release when a fire occurs. Ground wire must be connected to terminal on side of cartridge.**	
20. Connect two wires (3 and 4) to each cartridge (5) on fire extinguishers (6). See tags and wiring diagram (12-3.2). Remove tags.	

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off

END OF TASK

12-3.5 FIRE EXT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

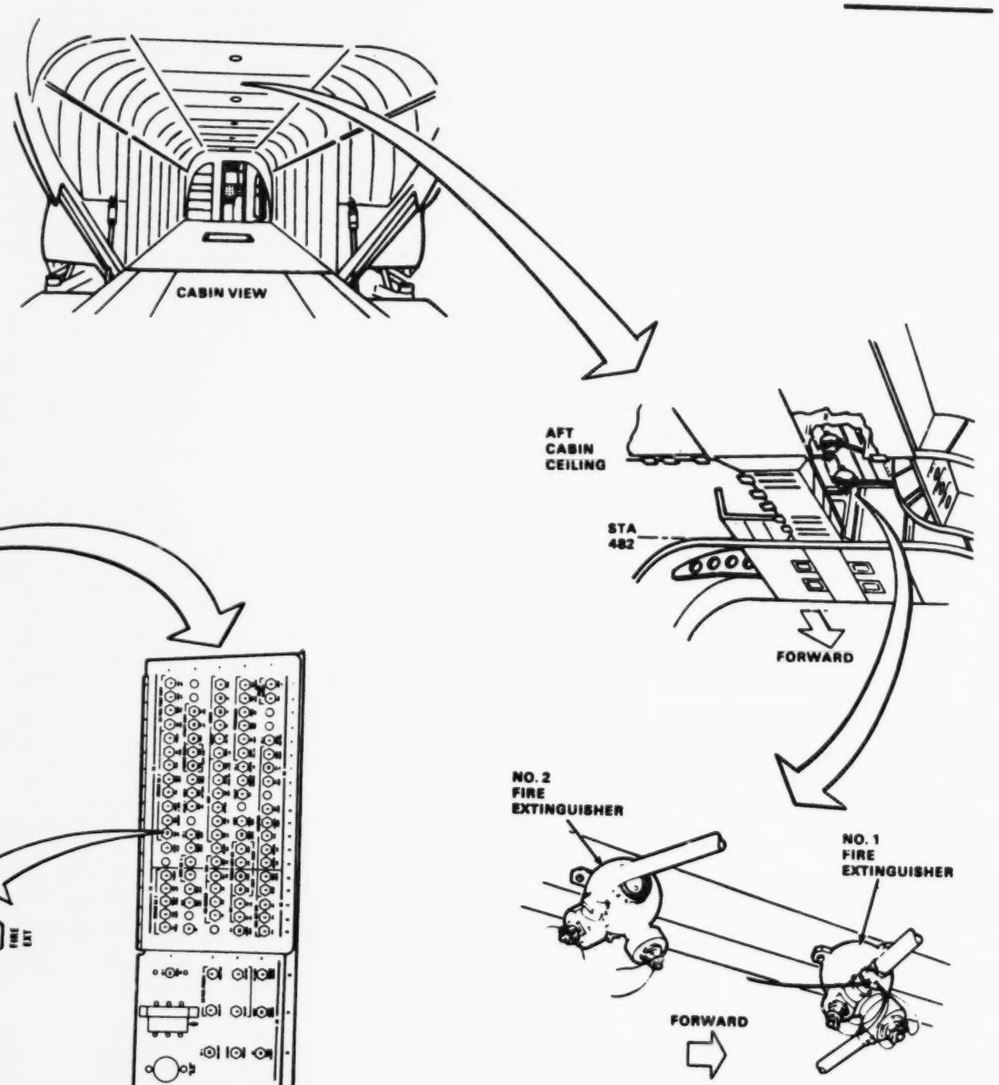
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

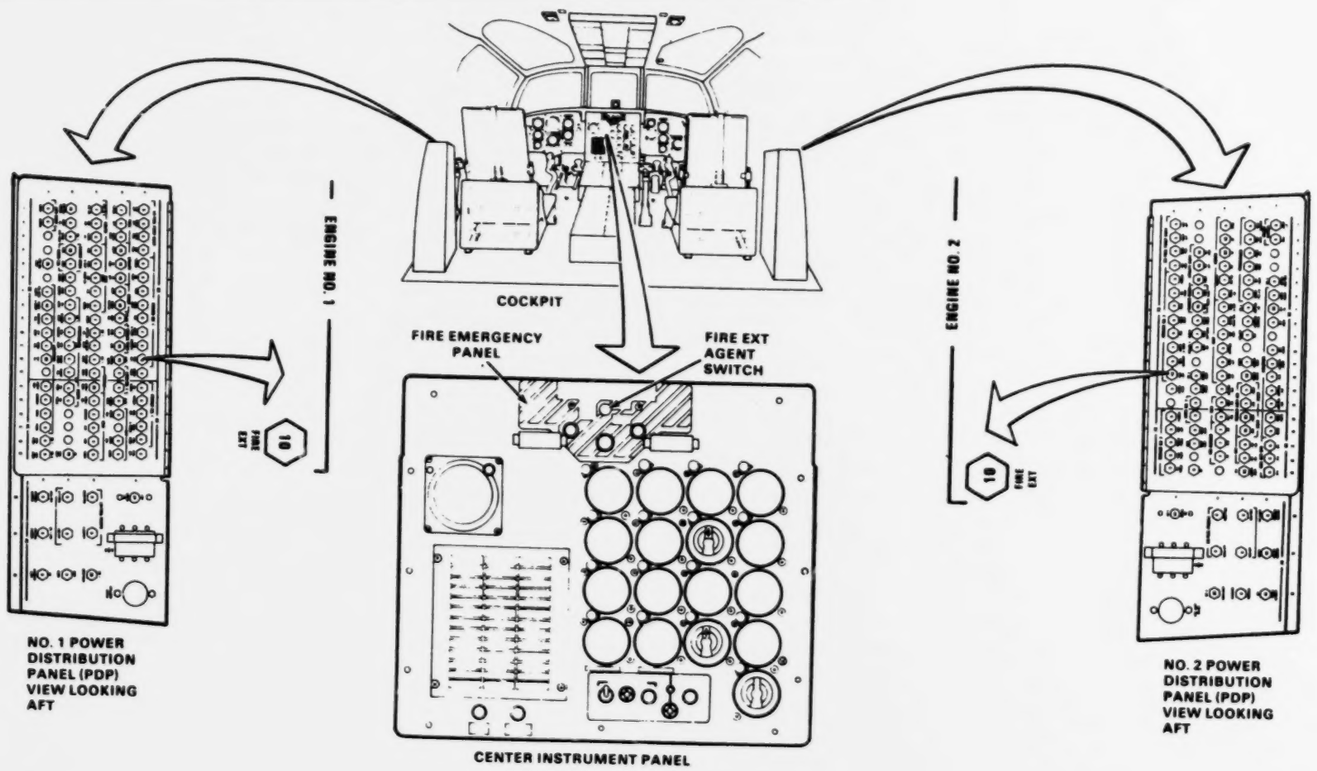
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off




ENGINE NO. 1
10 FIRE EXT
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT
COCKPIT
FIRE EMERGENCY PANEL
FIRE EXT AGENT SWITCH
CENTER INSTRUMENT PANEL
ENGINE NO. 2
10 FIRE EXT
NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

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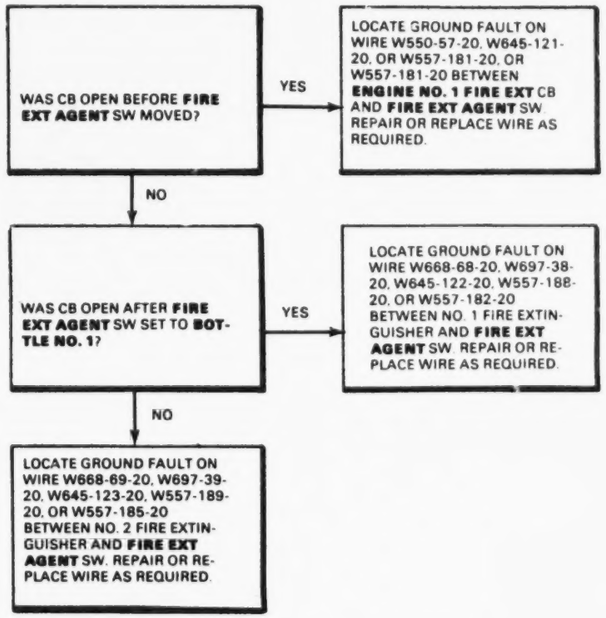
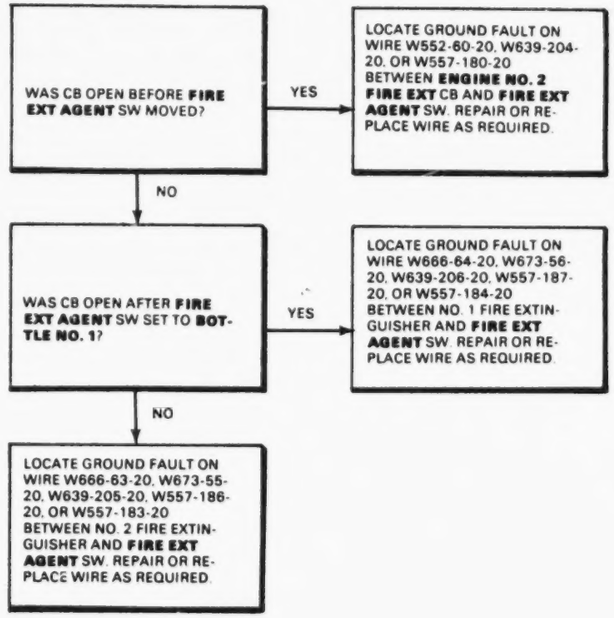
12-3.5 FIRE EXT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)

ENGINE NO. 1 FIRE EXT CIRCUIT BREAKER WILL NOT STAY CLOSED


WAS CB OPEN BEFORE FIRE EXT AGENT SW MOVED?
YES
LOCATE GROUND FAULT ON WIRE W550-57-20, W645-121-20, OR W557-181-20, OR W557-181-20 BETWEEN ENGINE NO. 1 FIRE EXT CB AND FIRE EXT AGENT SW REPAIR OR REPLACE WIRE AS REQUIRED.
NO
WAS CB OPEN AFTER FIRE EXT AGENT SW SET TO BOTTLE NO. 1?
YES
LOCATE GROUND FAULT ON WIRE W668-68-20, W697-38-20, W645-122-20, W557-188-20, OR W557-182-20 BETWEEN NO. 1 FIRE EXTINGUISHER AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W668-69-20, W697-39-20, W645-123-20, W557-189-20, OR W557-185-20 BETWEEN NO. 2 FIRE EXTINGUISHER AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.

ENGINE NO. 2 FIRE EXT CIRCUIT BREAKER WILL NOT STAYED CLOSED


WAS CB OPEN BEFORE FIRE EXT AGENT SW MOVED?
YES
LOCATE GROUND FAULT ON WIRE W552-60-20, W639-204-20, OR W557-180-20 BETWEEN ENGINE NO. 2 FIRE EXT CB AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
WAS CB OPEN AFTER FIRE EXT AGENT SW SET TO BOTTLE NO. 1?
YES
LOCATE GROUND FAULT ON WIRE W666-64-20, W673-56-20, W639-206-20, W557-187-20, OR W557-184-20 BETWEEN NO. 1 FIRE EXTINGUISHER AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W666-63-20, W673-55-20, W639-205-20, W557-186-20, OR W557-183-20 BETWEEN NO. 2 FIRE EXTINGUISHER AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

12-3.6 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 1 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 1

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

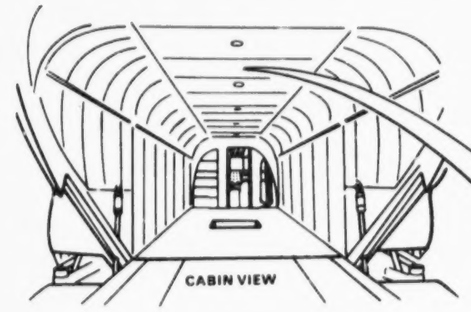
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

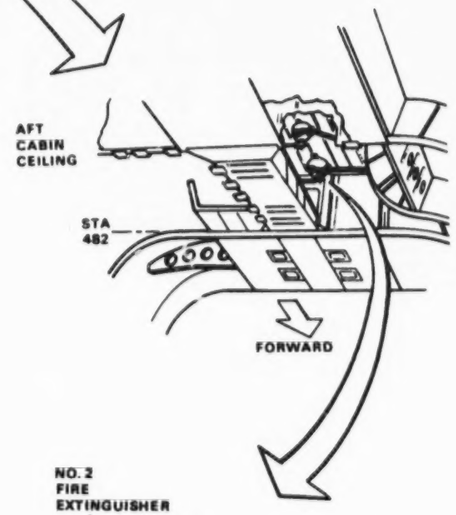
Materials:
None

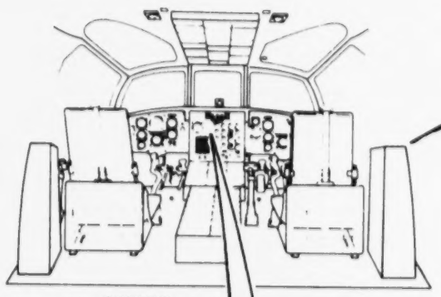
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

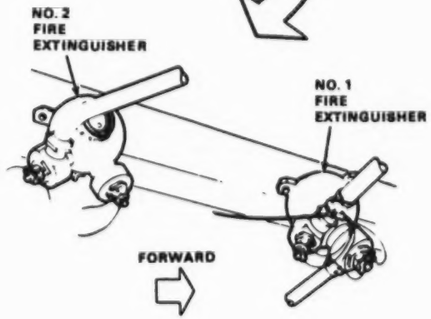
References:
TM 55-1520-240-23

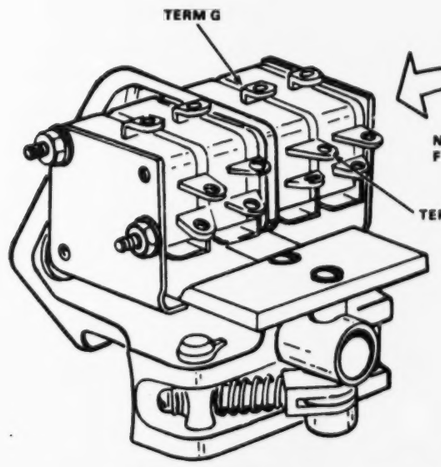
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

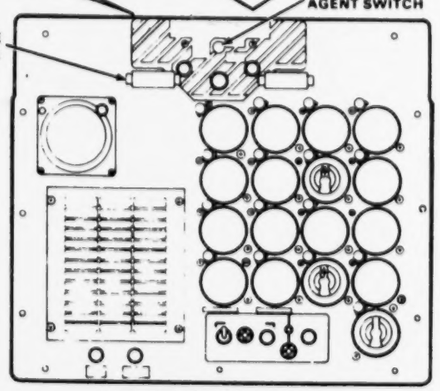


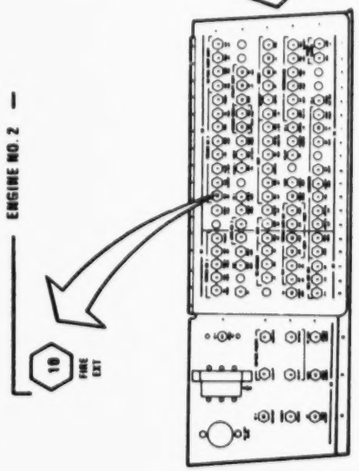












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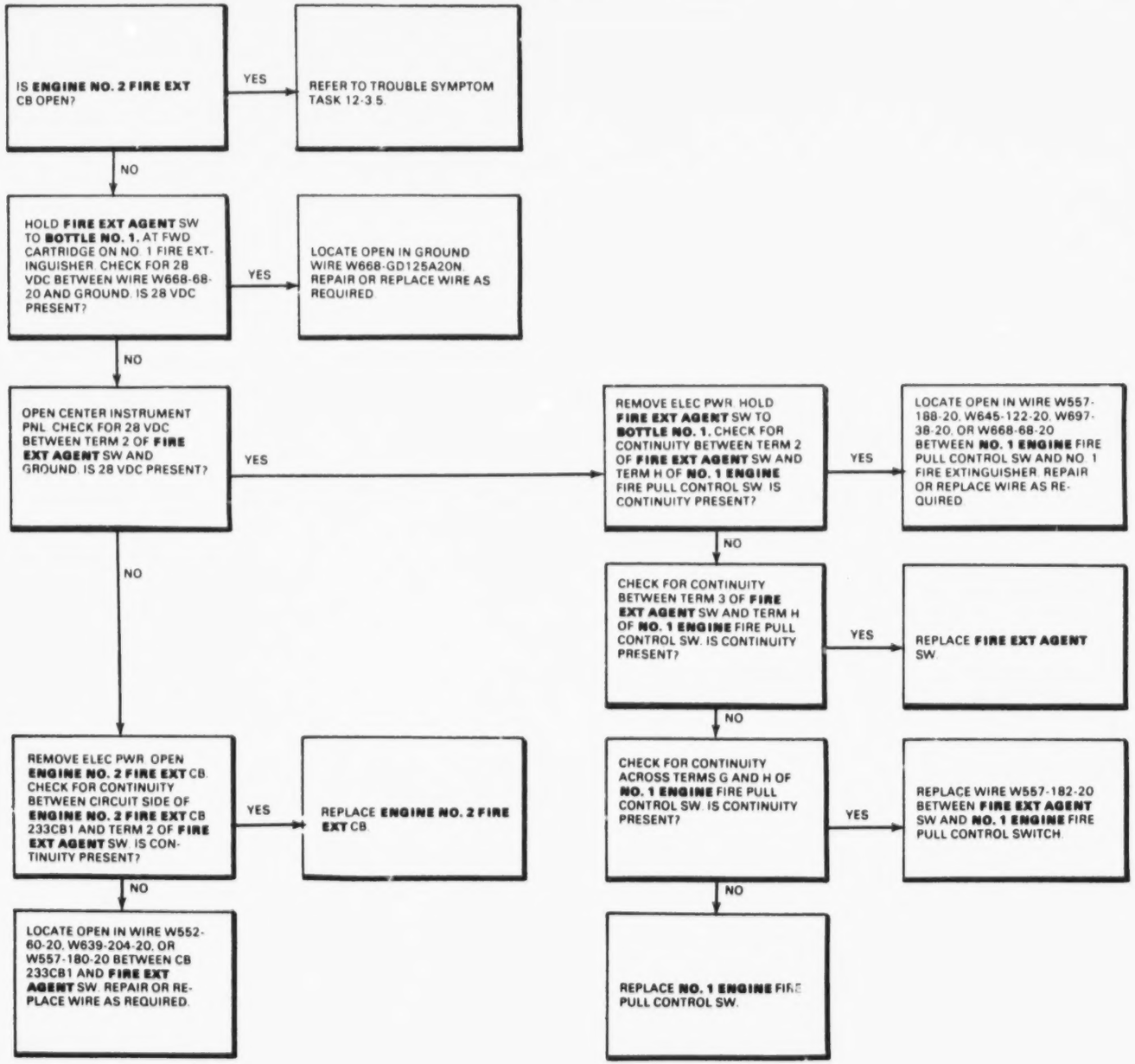
12-3.6 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 1 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 1 (Continued)


IS ENGINE NO. 2 FIRE EXT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-3.5.
NO
HOLD FIRE EXT AGENT SW TO BOTTLE NO. 1, AT FWD CARTRIDGE ON NO. 1 FIRE EXTINGUISHER. CHECK FOR 28 VDC BETWEEN WIRE W668-68-20 AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN GROUND WIRE W668-GD125A20N. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN CENTER INSTRUMENT PNL. CHECK FOR 28 VDC BETWEEN TERM 2 OF FIRE EXT AGENT SW AND GROUND. IS 28 VDC PRESENT?
YES
REMOVE ELEC PWR. HOLD FIRE EXT AGENT SW TO BOTTLE NO. 1. CHECK FOR CONTINUITY BETWEEN TERM 2 OF FIRE EXT AGENT SW AND TERM H OF NO. 1 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W557-188-20, W645-122-20, W697-38-20, OR W668-68-20 BETWEEN NO. 1 ENGINE FIRE PULL CONTROL SW AND NO. 1 FIRE EXTINGUISHER. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR CONTINUITY BETWEEN TERM 3 OF FIRE EXT AGENT SW AND TERM H OF NO. 1 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE FIRE EXT AGENT SW.
NO
CHECK FOR CONTINUITY ACROSS TERMS G AND H OF NO. 1 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE WIRE W557-182-20 BETWEEN FIRE EXT AGENT SW AND NO. 1 ENGINE FIRE PULL CONTROL SWITCH.
NO
REPLACE NO. 1 ENGINE FIRE PULL CONTROL SW.
NO
REMOVE ELEC PWR. OPEN ENGINE NO. 2 FIRE EXT CB. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF ENGINE NO. 2 FIRE EXT CB 233CB1 AND TERM 2 OF FIRE EXT AGENT SW. IS CONTINUITY PRESENT?
YES
REPLACE ENGINE NO. 2 FIRE EXT CB.
NO
LOCATE OPEN IN WIRE W552-60-20, W639-204-20, OR W557-180-20 BETWEEN CB 233CB1 AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

12-3.7 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 1 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 2

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

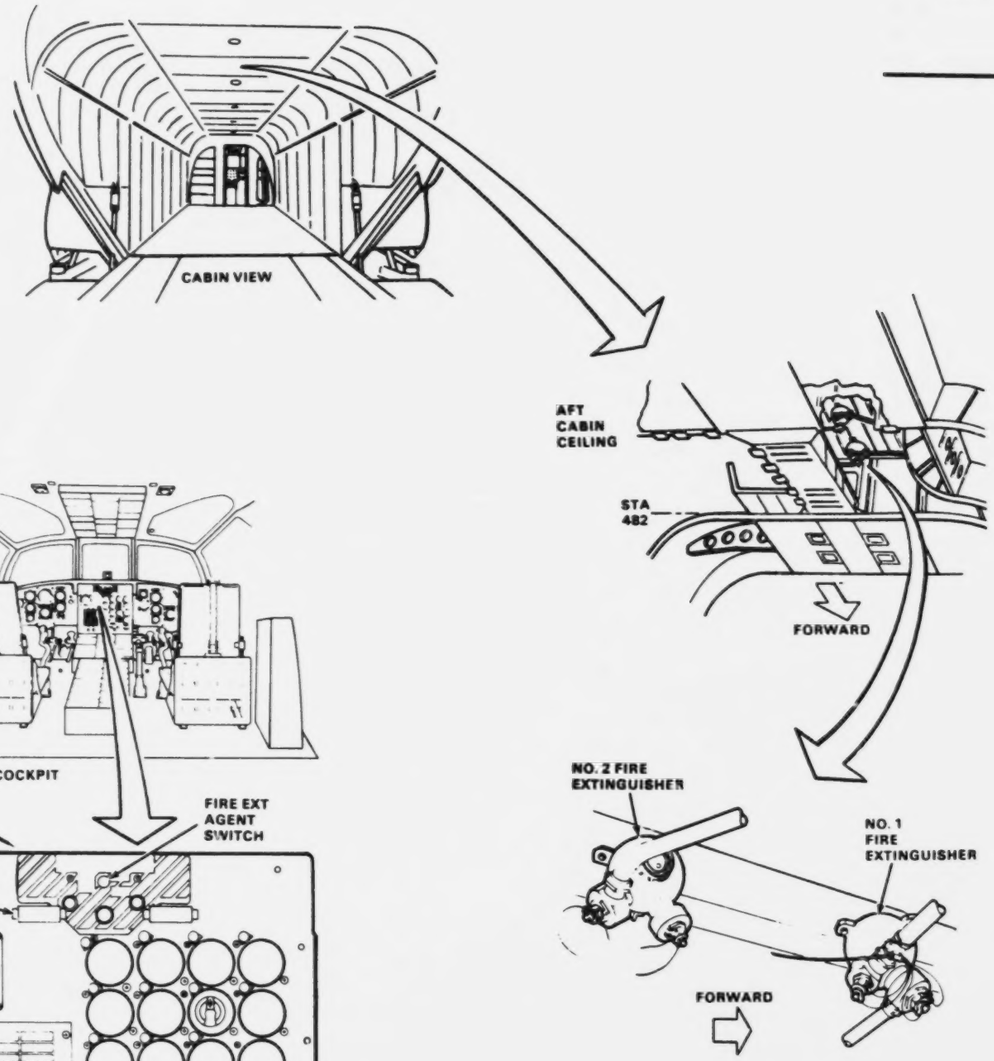
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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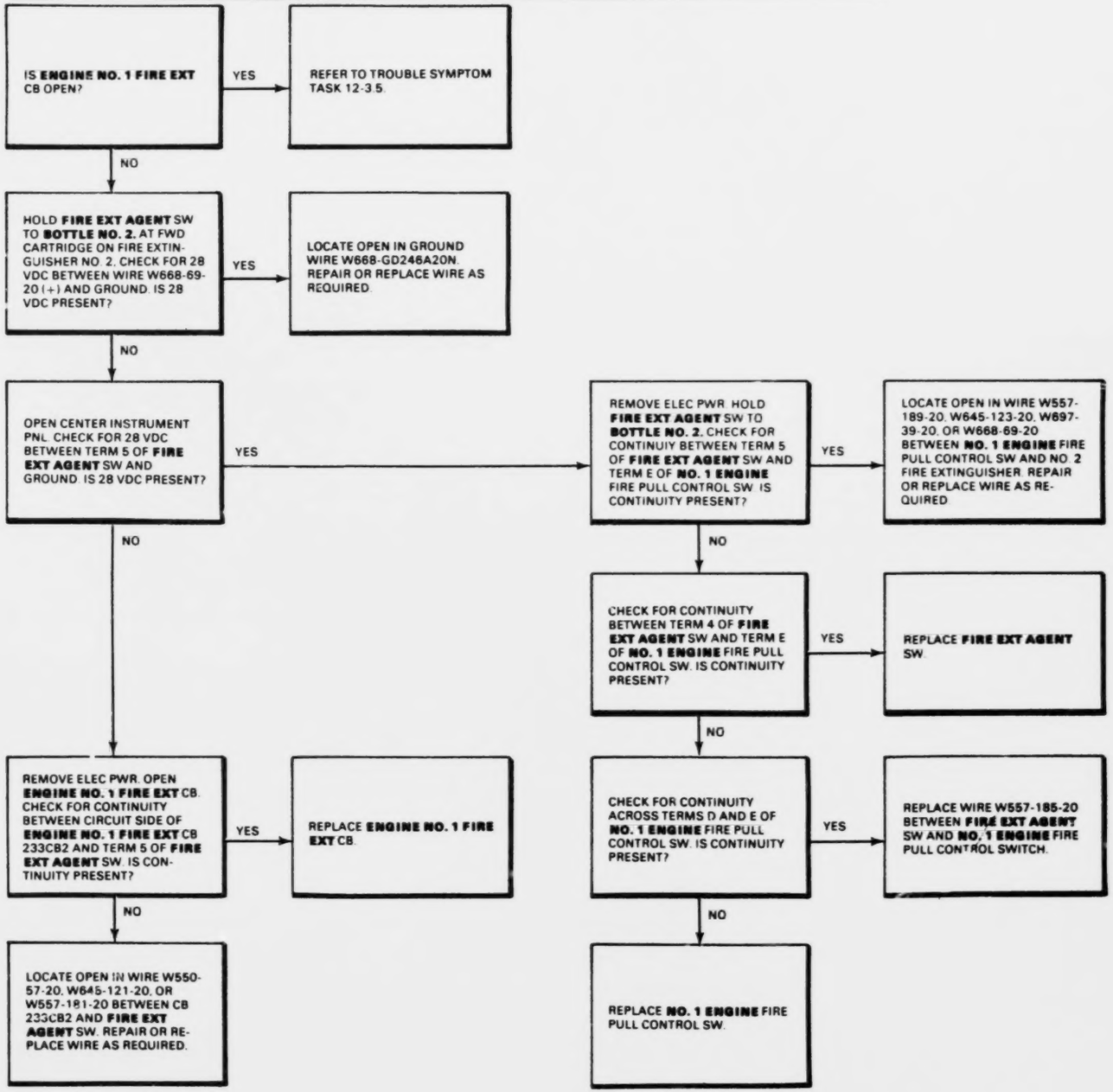
12-3.7 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO.1 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 2 (Continued)


IS ENGINE NO. 1 FIRE EXT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-3.5.
NO
HOLD FIRE EXT AGENT SW TO BOTTLE NO. 2. AT FWD CARTRIDGE ON FIRE EXTINGUISHER NO. 2, CHECK FOR 28 VDC BETWEEN WIRE W668-69-20 (+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN GROUND WIRE W668-GD246A20N. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN CENTER INSTRUMENT PNL. CHECK FOR 28 VDC BETWEEN TERM 5 OF FIRE EXT AGENT SW AND GROUND. IS 28 VDC PRESENT?
YES
REMOVE ELEC PWR. HOLD FIRE EXT AGENT SW TO BOTTLE NO. 2. CHECK FOR CONTINUIY BETWEEN TERM 5 OF FIRE EXT AGENT SW AND TERM E OF NO. 1 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W557-189-20, W645-123-20, W697-39-20, OR W668-69-20 BETWEEN NO. 1 ENGINE FIRE PULL CONTROL SW AND NO. 2 FIRE EXTINGUISHER. REPAIR OR REPLACE WIRE AS REQUIRED
NO
CHECK FOR CONTINUITY BETWEEN TERM 4 OF FIRE EXT AGENT SW AND TERM E OF NO. 1 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE FIRE EXT AGENT SW.
NO
CHECK FOR CONTINUITY ACROSS TERMS D AND E OF NO. 1 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE WIRE W557-185-20 BETWEEN FIRE EXT AGENT SW AND NO. 1 ENGINE FIRE PULL CONTROL SWITCH.
NO
REPLACE NO. 1 ENGINE FIRE PULL CONTROL SW.
NO
REMOVE ELEC PWR. OPEN ENGINE NO. 1 FIRE EXT CB. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF ENGINE NO. 1 FIRE EXT CB 233CB2 AND TERM 5 OF FIRE EXT AGENT SW. IS CONTINUITY PRESENT?
YES
REPLACE ENGINE NO. 1 FIRE EXT CB.
NO
LOCATE OPEN IN WIRE W550-57-20, W645-121-20, OR W557-181-20 BETWEEN CB 233CB2 AND FIRE EXT AGENT SW. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

12-3.8 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 2 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 1

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

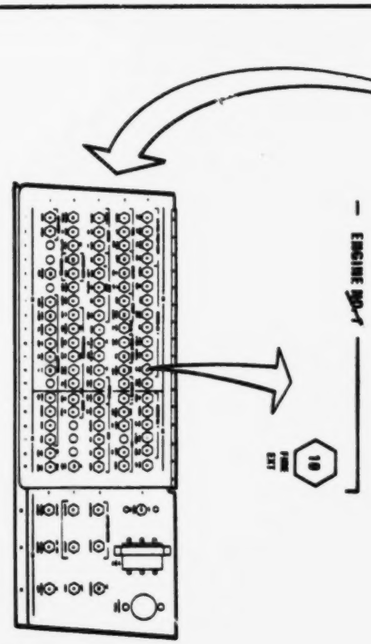
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

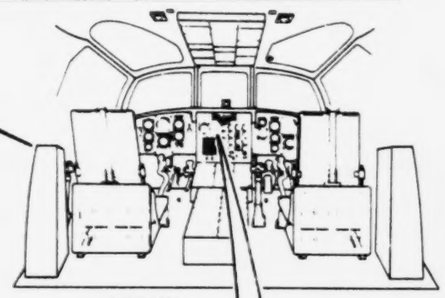
Materials:
None

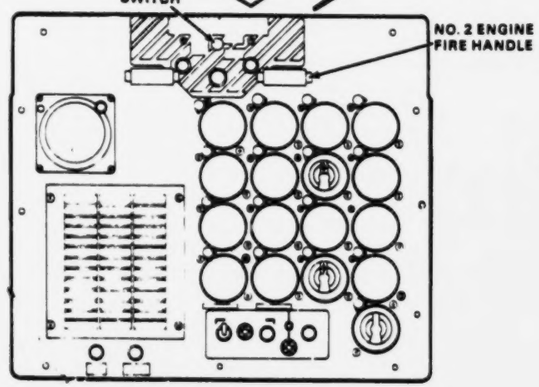
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

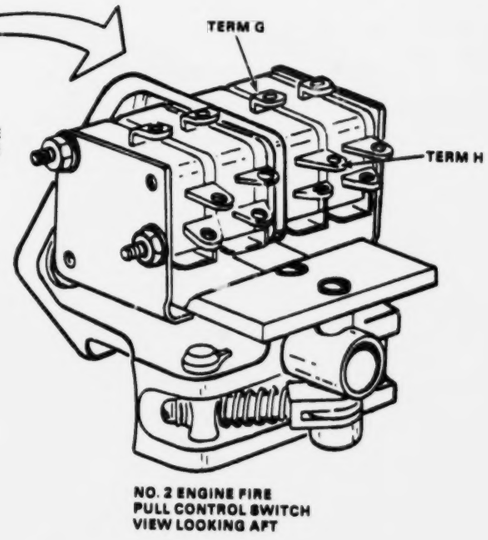
References:
TM 55-1520-240-23

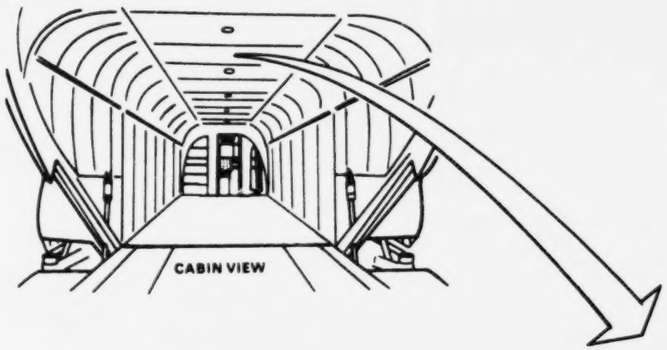
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

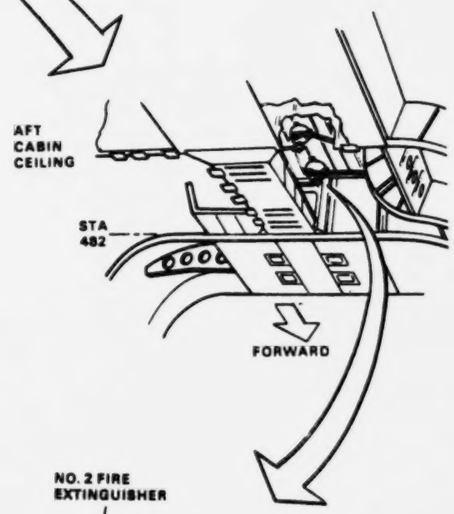


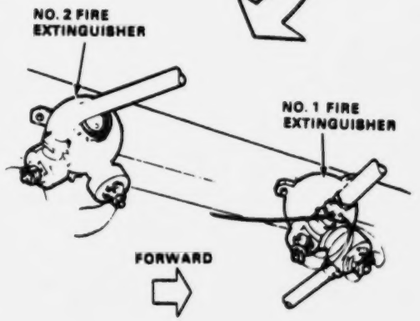












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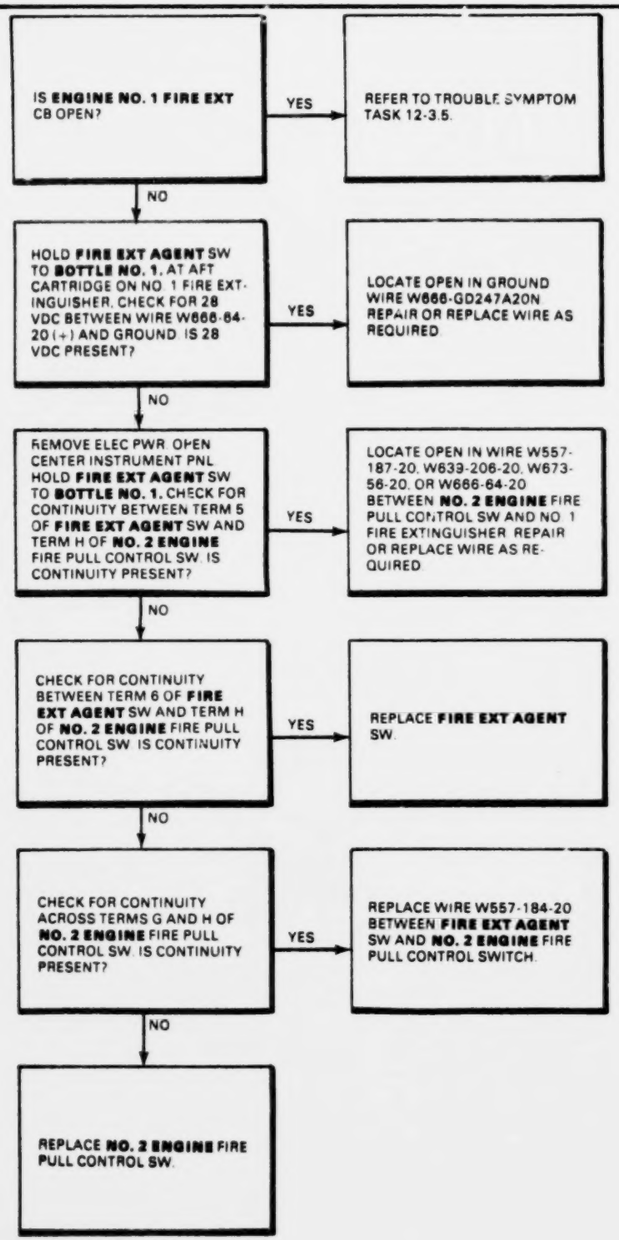
12-3.8 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 2 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 1 (Continued)


IS ENGINE NO. 1 FIRE EXT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-3.5.
NO
HOLD FIRE EXT AGENT SW TO BOTTLE NO. 1, AT AFT CARTRIDGE ON NO. 1 FIRE EXTINGUISHER, CHECK FOR 28 VDC BETWEEN WIRE W666-64-20 (+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN GROUND WIRE W666-GD247A20N. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN CENTER INSTRUMENT PNL. HOLD FIRE EXT AGENT SW TO BOTTLE NO. 1. CHECK FOR CONTINUITY BETWEEN TERM 5 OF FIRE EXT AGENT SW AND TERM H OF NO. 2 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W557-187-20, W639-206-20, W673-56-20, OR W666-64-20 BETWEEN NO. 2 ENGINE FIRE PULL CONTROL SW AND NO. 1 FIRE EXTINGUISHER. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR CONTINUITY BETWEEN TERM 6 OF FIRE EXT AGENT SW AND TERM H OF NO. 2 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE FIRE EXT AGENT SW.
NO
CHECK FOR CONTINUITY ACROSS TERMS G AND H OF NO. 2 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE WIRE W557-184-20 BETWEEN FIRE EXT AGENT SW AND NO. 2 ENGINE FIRE PULL CONTROL SWITCH.
NO
REPLACE NO. 2 ENGINE FIRE PULL CONTROL SW.

END OF TASK

12-3.9 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 2 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 2

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

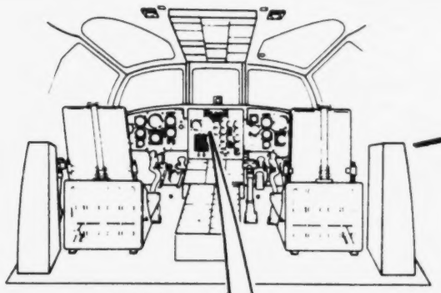
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

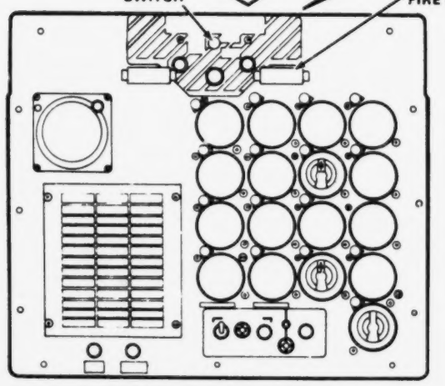
Materials:
None

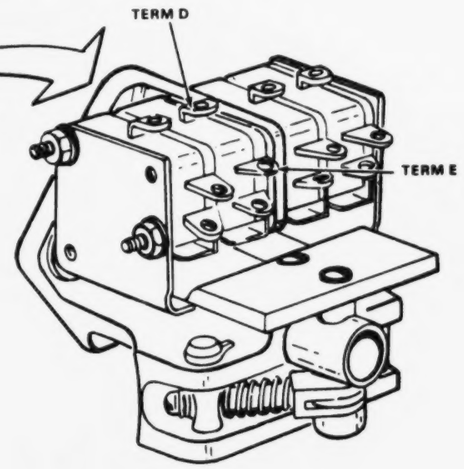
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

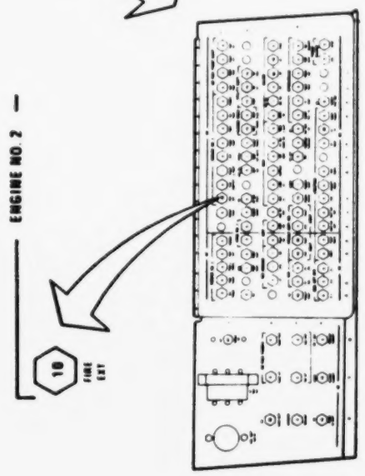
References:
TM 55-1520-240-23

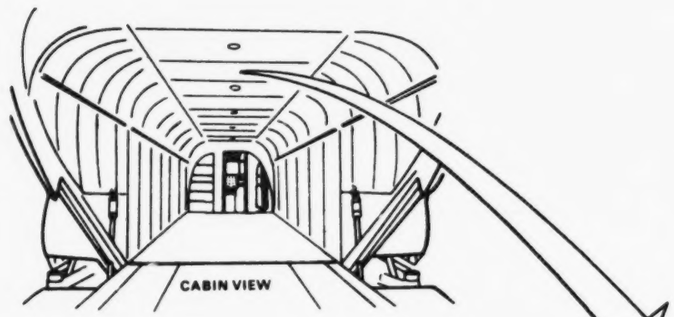
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

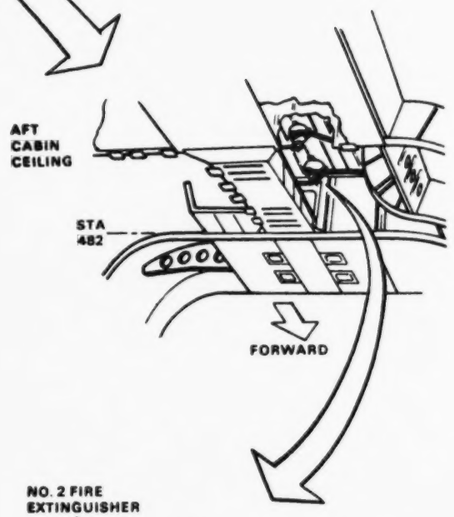


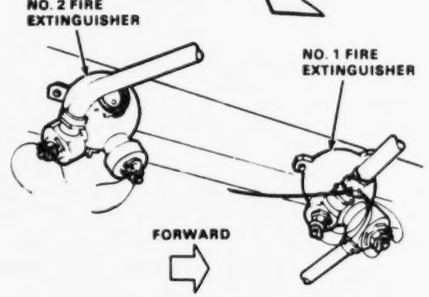












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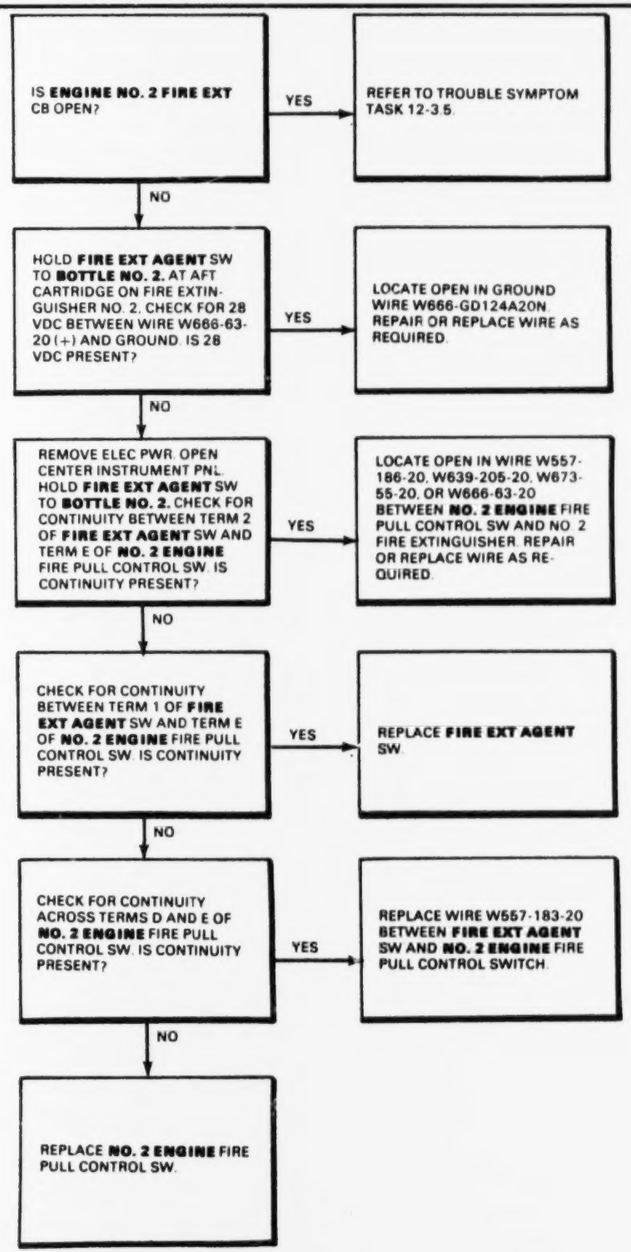
12-3.9 MULTIMETER DOES NOT INDICATE 28 VDC WITH NO. 2 ENGINE FIRE HANDLE OUT AND FIRE EXT AGENT SWITCH AT BOTTLE NO. 2 (Continued)

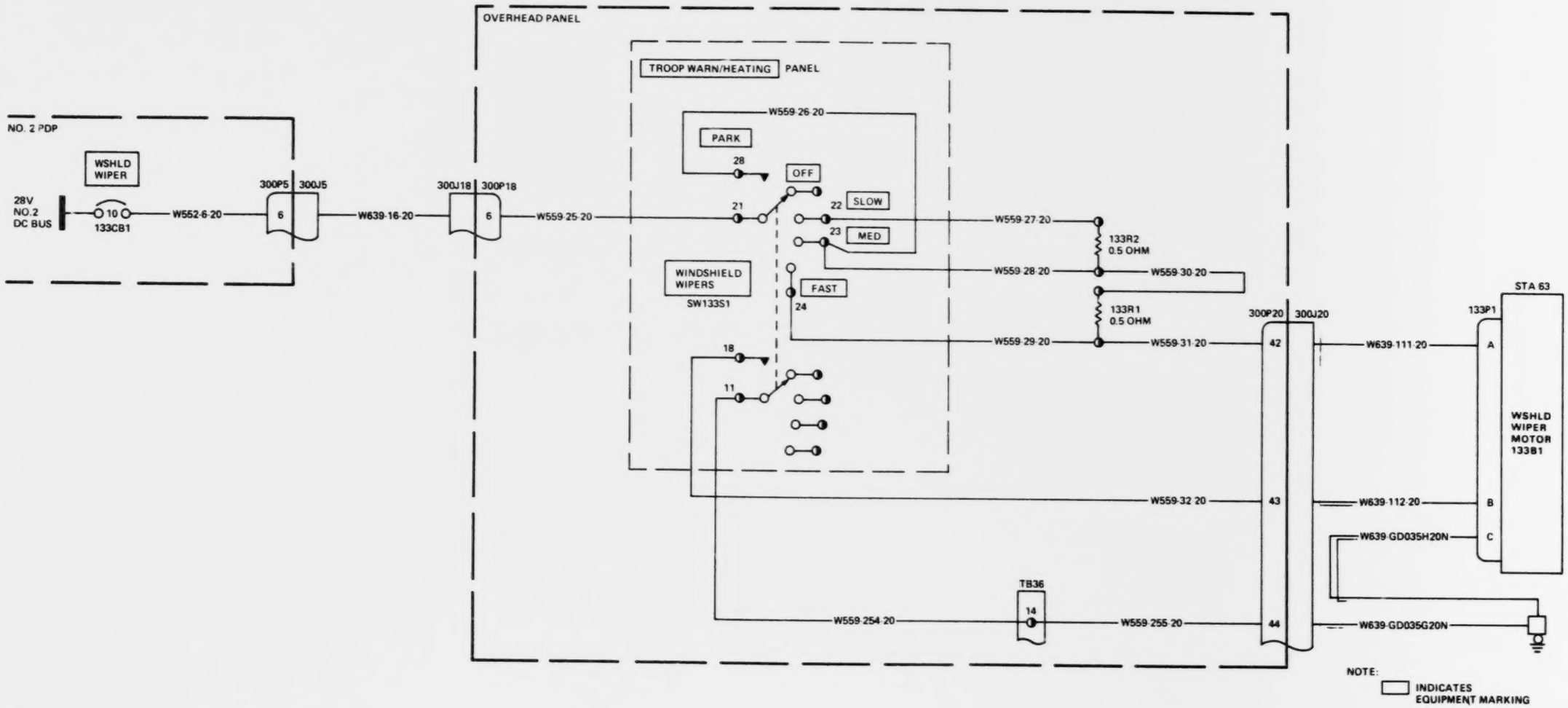

IS ENGINE NO. 2 FIRE EXT CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-3.5.
NO
HOLD FIRE EXT AGENT SW TO BOTTLE NO. 2. AT AFT CARTRIDGE ON FIRE EXTINGUISHER NO. 2, CHECK FOR 28 VDC BETWEEN WIRE W666-63-20 (+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN GROUND WIRE W666-GD124A20N. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN CENTER INSTRUMENT PNL. HOLD FIRE EXT AGENT SW TO BOTTLE NO. 2. CHECK FOR CONTINUITY BETWEEN TERM 2 OF FIRE EXT AGENT SW AND TERM E OF NO. 2 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W557-186-20, W639-205-20, W673-55-20, OR W666-63-20 BETWEEN NO. 2 ENGINE FIRE PULL CONTROL SW AND NO. 2 FIRE EXTINGUISHER. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR CONTINUITY BETWEEN TERM 1 OF FIRE EXT AGENT SW AND TERM E OF NO. 2 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE FIRE EXT AGENT SW.
NO
CHECK FOR CONTINUITY ACROSS TERMS D AND E OF NO. 2 ENGINE FIRE PULL CONTROL SW. IS CONTINUITY PRESENT?
YES
REPLACE WIRE W557-183-20 BETWEEN FIRE EXT AGENT SW AND NO. 2 ENGINE FIRE PULL CONTROL SWITCH.
NO
REPLACE NO. 2 ENGINE FIRE PULL CONTROL SW.

END OF TASK

12-4 WINDSHIELD WIPERS

12-4 WINDSHIELD WIPERS

12-4.1 WINDSHIELD WIPERS WIRING DIAGRAM



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12-4.2 WINDSHIELD WIPERS VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Work Stand

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

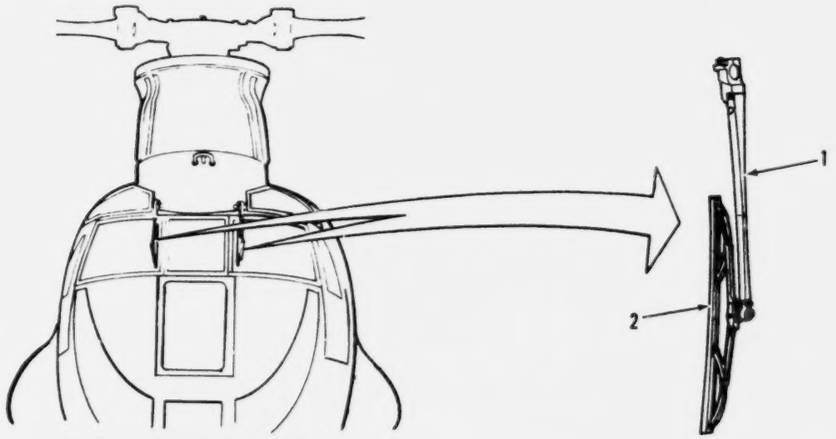
References:
TM 55-1520-240-23

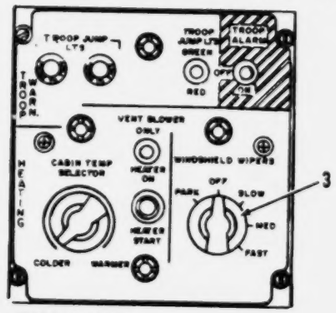
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Off

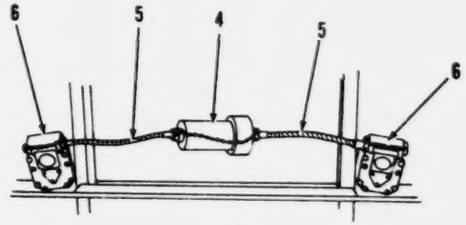
TASK	RESULT
1. **Check windshield wiper arms (1) and wiper blades (2).**	If either arm (1) is damaged, replace it. If either blade (2) is cracked, torn, or loose, replace it.
2. **Check WINDSHIELD WIPERS switch (3).**	If switch (3) is loose or damaged, tighten or replace it as required.
3. **Lower overhead panel.**	
4. **Check windshield wiper motor (4), shafts (5), and actuators (6).**	If windshield wiper motor (4) is loose or damaged, tighten or replace it as required. If either shaft (5) is damaged, replace it. If either actuator (6) is loose or damaged, tighten or replace it as required.

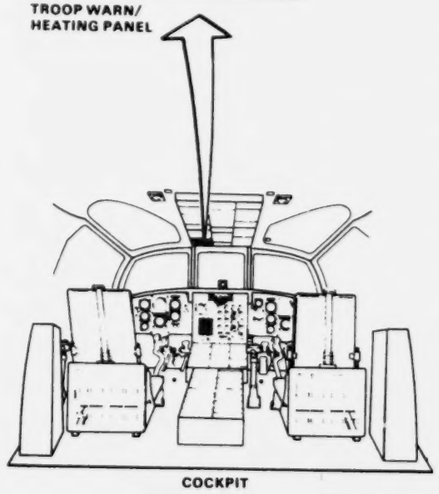
FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Secure overhead panel.









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END OF TASK

12-4.3 WINDSHIELD WIPERS OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Water Hose
Stop Watch

Materials:
None

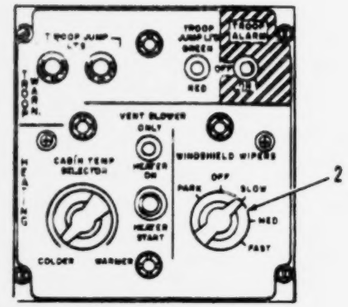
Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

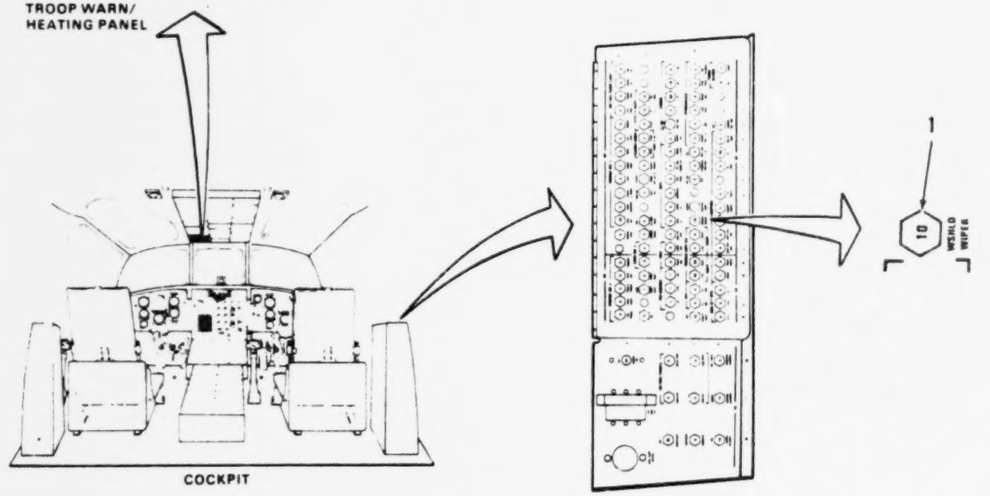
References:
TM 55-1520-240-23

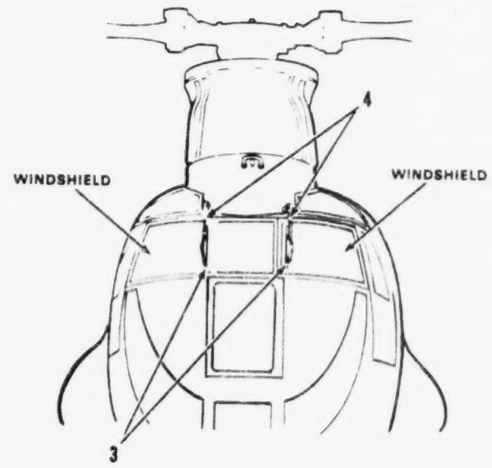
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off
Visual Check Of Windshield Wipers Performed (Task 12-4.2)
Hose Connected To Water Supply

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Electrical power off.
Battery disconnected.
Hose Disconnected

TASK	RESULT
1. **Check** that **WSHLD WIPER circuit breaker (1)** is closed.	If WSHLD WIPER circuit breaker (1) is open, close it. If it opens again, go to task 12-4.4.
CAUTION **Do not operate windshield wipers on dry or dirty windshield. Windshield can become scratched.**	
2. Spray pilot's and copilot's windshields with water. Continue spraying water until check is complete.	
3. **Set WINDSHIELD WIPERS switch (2) to SLOW.**	Both windshield wiper blades (3) shall move back and forth across pilot and copilot windshields approximately 80 times per minute without hitting windshield framing. If blades don't move or move too slow, go to task 12-4.5. If blades hit framing, adjust wiper arm (4) position.
4. **Set WINDSHIELD WIPERS switch (2) to MED.**	Both windshield wiper blades (3) shall move faster. If not, go to task 12-4.5.
5. **Set WINDSHIELD WIPERS switch (2) to FAST.**	Both wiper blades (3) shall move back and forth across windshields approximately 138 times per minute. If not, go to task 12-4.5. If excessive noise comes from direction of overhead panel, go to task 12-4.6.
6. **Set WINDSHIELD WIPERS switch (2) to OFF.**	Both wiper blades (3) shall immediately stop. If not, replace WINDSHIELD WIPERS switch (2).
7. **Set and hold WINDSHIELD WIPERS switch (2) to PARK.**	Each wiper blade (3) shall move to inboard edge of it's windshield (park position). If not go to task 12-4.7.
8. **Release WINDSHIELD WIPERS switch (2).**	WINDSHIELD WIPERS switch (2) shall return to OFF position. If not, replace WINDSHIELD WIPERS switch.







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END OF TASK

12-4.4 WSHLD WIPER CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

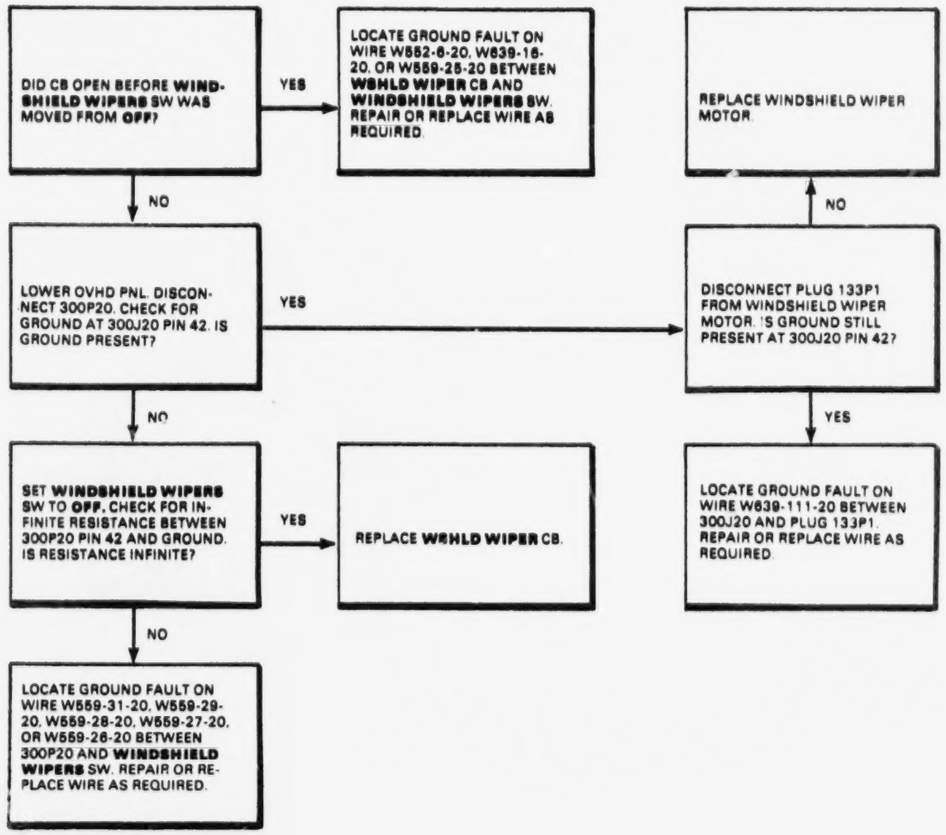
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

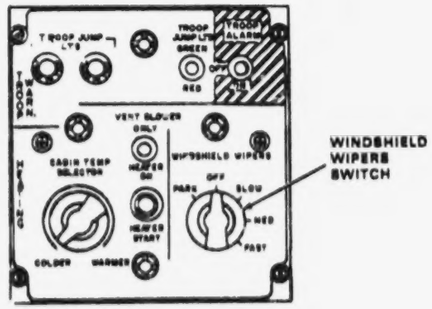
Materials:
None

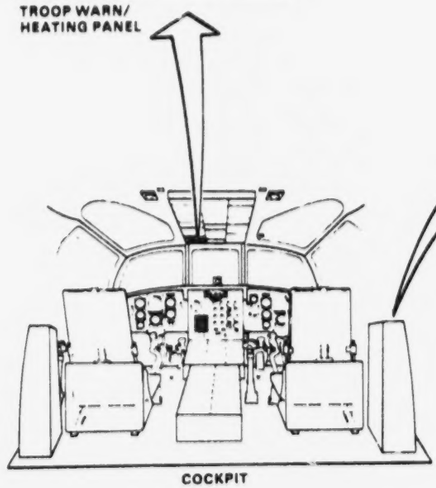
Personnel Required:
68F20 Aircraft Electrician

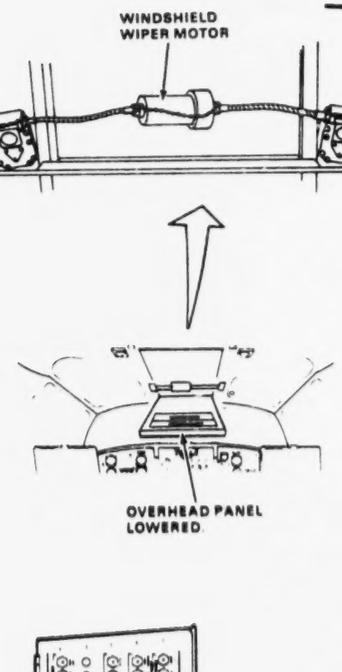
References:
TM 55-1520-240-23

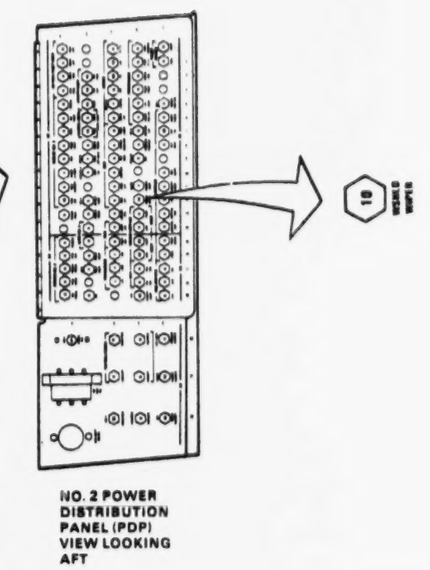
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DID CB OPEN BEFORE WINDSHIELD WIPERS SW WAS MOVED FROM OFF?
YES
LOCATE GROUND FAULT ON WIRE W552-6-20, W639-16-20, OR W559-25-20 BETWEEN WSHLD WIPER CB AND WINDSHIELD WIPERS SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER OVHD PNL. DISCONNECT 300P20. CHECK FOR GROUND AT 300J20 PIN 42. IS GROUND PRESENT?
YES
NO
SET WINDSHIELD WIPERS SW TO OFF. CHECK FOR INFINITE RESISTANCE BETWEEN 300P20 PIN 42 AND GROUND. IS RESISTANCE INFINITE?
YES
REPLACE WSHLD WIPER CB.
NO
LOCATE GROUND FAULT ON WIRE W559-31-20, W559-29-20, W559-28-20, W559-27-20, OR W559-26-20 BETWEEN 300P20 AND WINDSHIELD WIPERS SW. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE WINDSHIELD WIPER MOTOR.
NO
DISCONNECT PLUG 133P1 FROM WINDSHIELD WIPER MOTOR. IS GROUND STILL PRESENT AT 300J20 PIN 42?
YES
LOCATE GROUND FAULT ON WIRE W639-111-20 BETWEEN 300J20 AND PLUG 133P1. REPAIR OR REPLACE WIRE AS REQUIRED.









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0145-4928-SPA

END OF TASK

12-4.5 WINDSHIELD WIPER OR WIPERS DO NOT OPERATE AT ONE SWITCH POSITION OR ANY SWITCH POSITION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

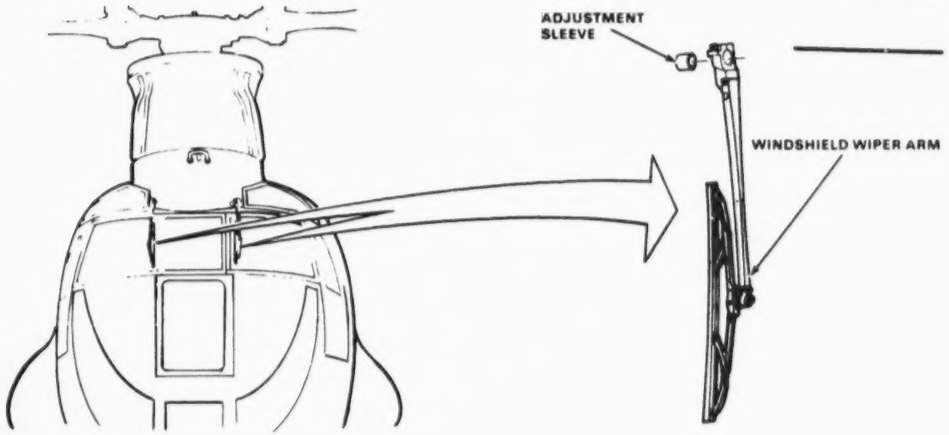
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

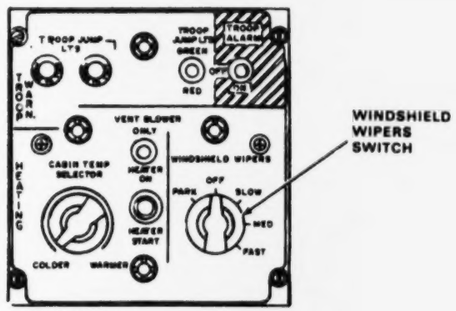
Materials:
None

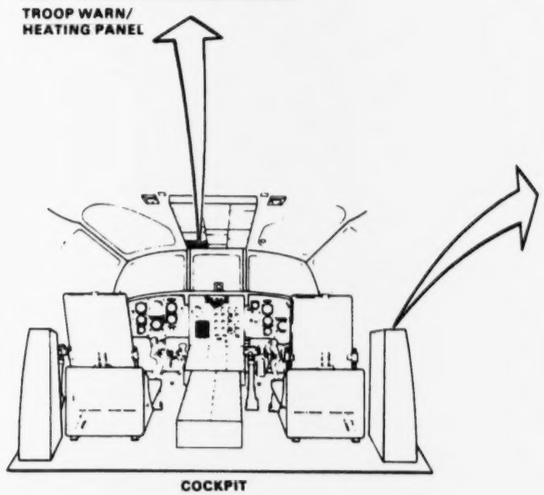
Personnel Required:
68F20 Aircraft Electrician

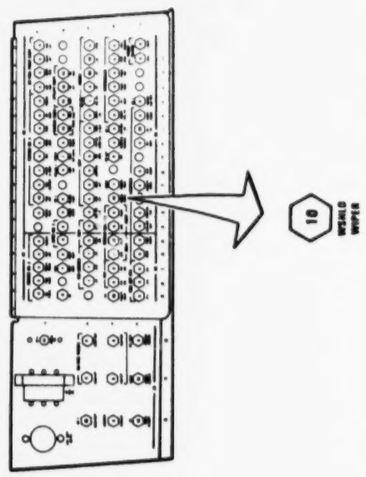
References:
TM 55-1520-240-23

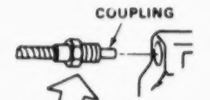
Equipment condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off
Windshields Clean And Wet

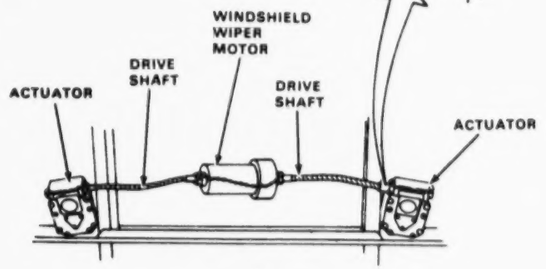


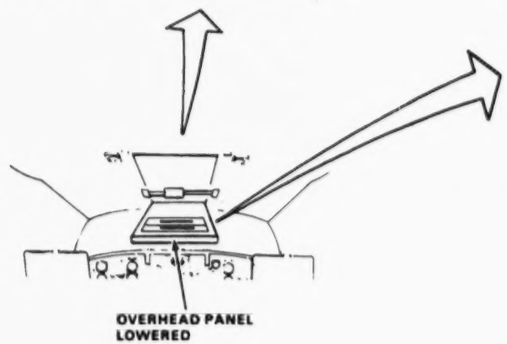


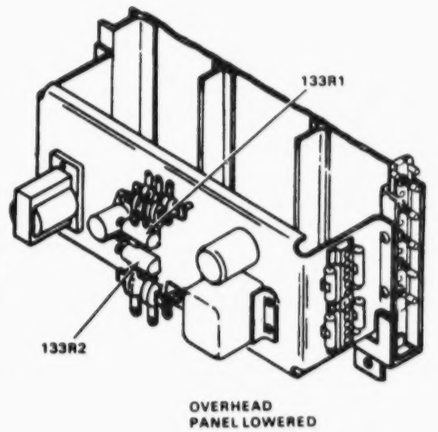












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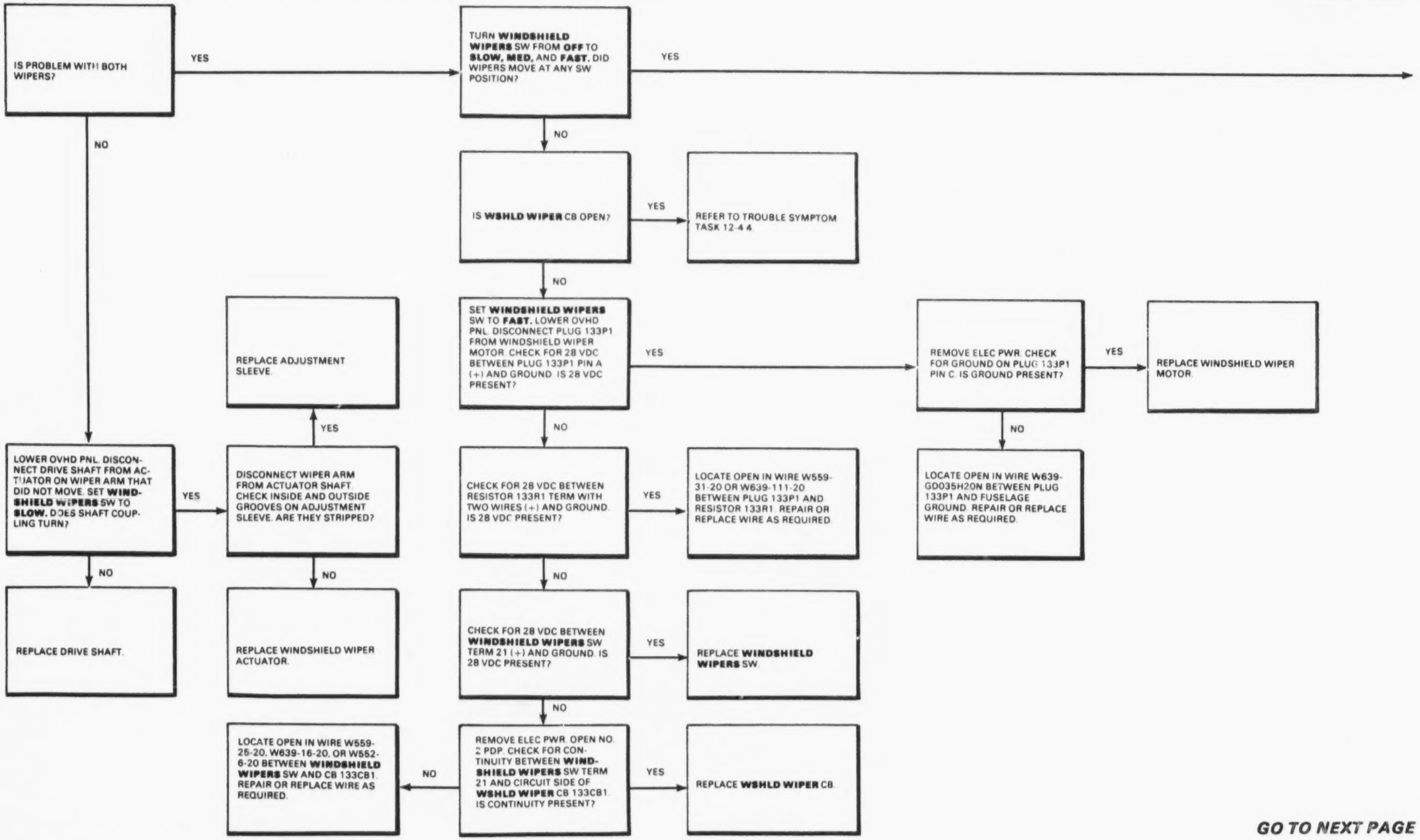
12-4.5 WINDSHIELD WIPER OR WIPERS DO NOT OPERATE AT ONE SWITCH POSITION OR AT ANY SWITCH POSITION (Continued)


IS PROBLEM WITH BOTH WIPERS?
YES
NO
TURN WINDSHIELD WIPERS SW FROM OFF TO SLOW, MED, AND FAST. DID WIPERS MOVE AT ANY SW POSITION?
YES
NO
IS WSHLD WIPER CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 12-4 4
NO
SET WINDSHIELD WIPERS SW TO FAST. LOWER OVHD PNL. DISCONNECT PLUG 133P1 FROM WINDSHIELD WIPER MOTOR. CHECK FOR 28 VDC BETWEEN PLUG 133P1 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REMOVE ELEC PWR. CHECK FOR GROUND ON PLUG 133P1 PIN C. IS GROUND PRESENT?
YES
REPLACE WINDSHIELD WIPER MOTOR.
NO
LOCATE OPEN IN WIRE W639-GD035H20N BETWEEN PLUG 133P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28 VDC BETWEEN RESISTOR 133R1 TERM WITH TWO WIRES (+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-31-20 OR W639-111-20 BETWEEN PLUG 133P1 AND RESISTOR 133R1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28 VDC BETWEEN WINDSHIELD WIPERS SW TERM 21 (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE WINDSHIELD WIPERS SW.
NO
REMOVE ELEC PWR. OPEN NO. 2 PDP. CHECK FOR CONTINUITY BETWEEN WINDSHIELD WIPERS SW TERM 21 AND CIRCUIT SIDE OF WSHLD WIPER CB 133CB1. IS CONTINUITY PRESENT?
YES
REPLACE WSHLD WIPER CB.
NO
LOCATE OPEN IN WIRE W559-25-20, W639-16-20, OR W552-6-20 BETWEEN WINDSHIELD WIPERS SW AND CB 133CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE ADJUSTMENT SLEEVE.
YES
DISCONNECT WIPER ARM FROM ACTUATOR SHAFT. CHECK INSIDE AND OUTSIDE GROOVES ON ADJUSTMENT SLEEVE. ARE THEY STRIPPED?
NO
REPLACE WINDSHIELD WIPER ACTUATOR.
LOWER OVHD PNL. DISCONNECT DRIVE SHAFT FROM ACTUATOR ON WIPER ARM THAT DID NOT MOVE. SET WINDSHIELD WIPERS SW TO SLOW. DOES SHAFT COUPLING TURN?
YES
NO
REPLACE DRIVE SHAFT.

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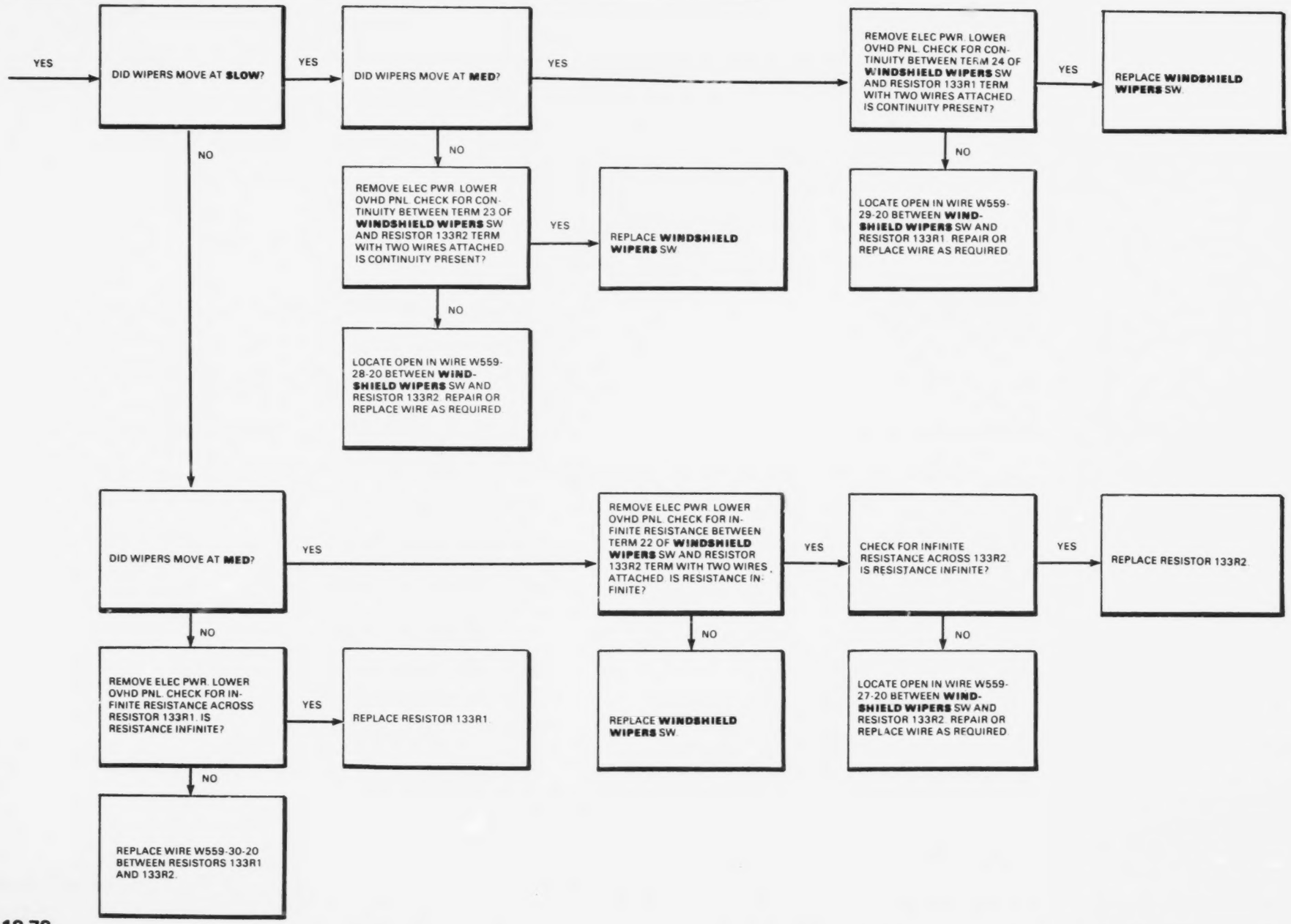
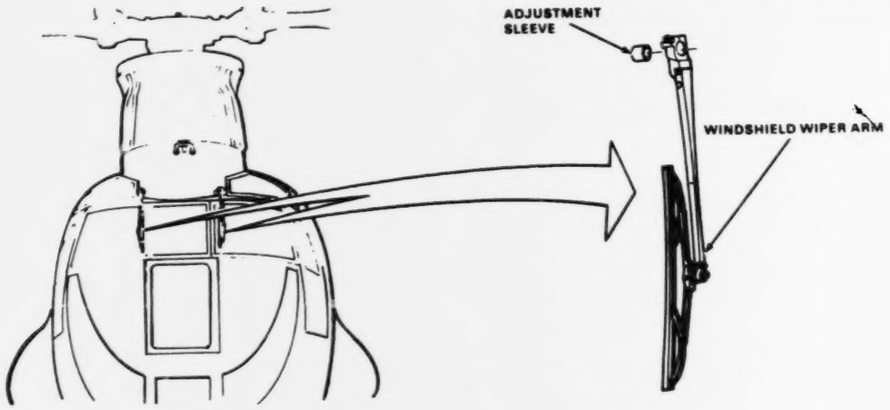
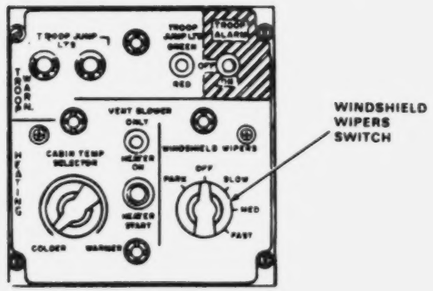
12-4.5 WINDSHIELD WIPER OR WIPERS DO NOT OPERATE AT ONE SWITCH POSITION OR AT ANY SWITCH POSITION (Continued)

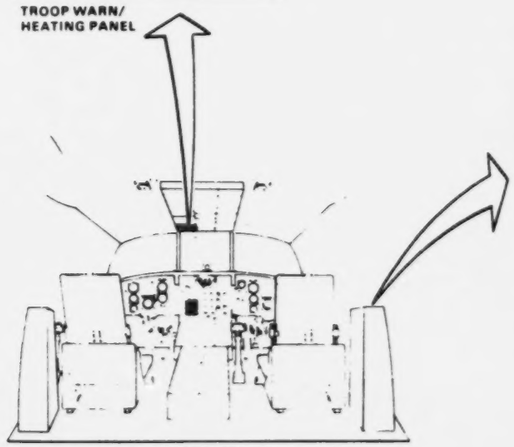

YES
DID WIPERS MOVE AT **SLOW**?
YES
DID WIPERS MOVE AT **MED**?
YES
REMOVE ELEC PWR. LOWER OVHD PNL. CHECK FOR CONTINUITY BETWEEN TERM 24 OF **WINDSHIELD WIPERS** SW AND RESISTOR 133R1 TERM WITH TWO WIRES ATTACHED. IS CONTINUITY PRESENT?
YES
REPLACE **WINDSHIELD WIPERS** SW.
NO
REMOVE ELEC PWR. LOWER OVHD PNL. CHECK FOR CONTINUITY BETWEEN TERM 23 OF **WINDSHIELD WIPERS** SW AND RESISTOR 133R2 TERM WITH TWO WIRES ATTACHED. IS CONTINUITY PRESENT?
YES
REPLACE **WINDSHIELD WIPERS** SW
NO
LOCATE OPEN IN WIRE W559-28-20 BETWEEN **WINDSHIELD WIPERS** SW AND RESISTOR 133R2. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W559-29-20 BETWEEN **WINDSHIELD WIPERS** SW AND RESISTOR 133R1. REPAIR OR REPLACE WIRE AS REQUIRED
NO
DID WIPERS MOVE AT **MED**?
YES
REMOVE ELEC PWR. LOWER OVHD PNL. CHECK FOR INFINITE RESISTANCE BETWEEN TERM 22 OF **WINDSHIELD WIPERS** SW AND RESISTOR 133R2 TERM WITH TWO WIRES ATTACHED. IS RESISTANCE INFINITE?
YES
CHECK FOR INFINITE RESISTANCE ACROSS 133R2. IS RESISTANCE INFINITE?
YES
REPLACE RESISTOR 133R2.
NO
REMOVE ELEC PWR. LOWER OVHD PNL. CHECK FOR INFINITE RESISTANCE ACROSS RESISTOR 133R1. IS RESISTANCE INFINITE?
YES
REPLACE RESISTOR 133R1.
NO
REPLACE **WINDSHIELD WIPERS** SW.
NO
LOCATE OPEN IN WIRE W559-27-20 BETWEEN **WINDSHIELD WIPERS** SW AND RESISTOR 133R2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE WIRE W559-30-20 BETWEEN RESISTORS 133R1 AND 133R2.

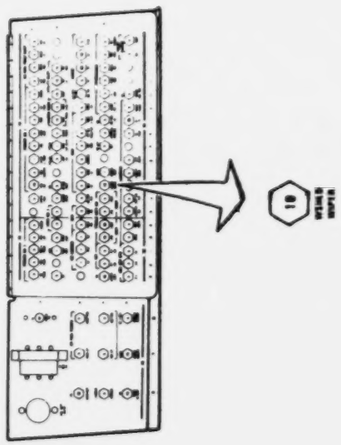
END OF TASK

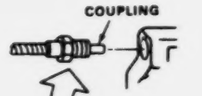
12-4.5 WINDSHIELD WIPER OR WIPERS DO NOT OPERATE AT ONE SWITCH POSITION OR AT ANY SWITCH POSITION (Continued)

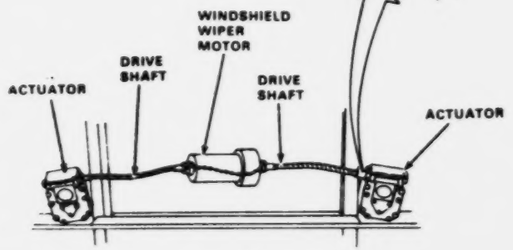


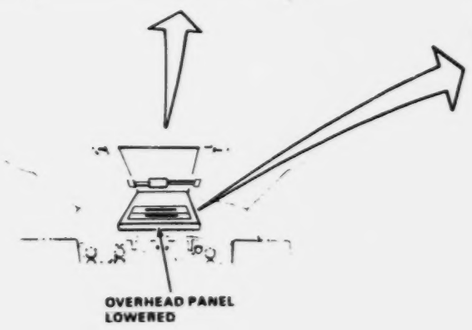


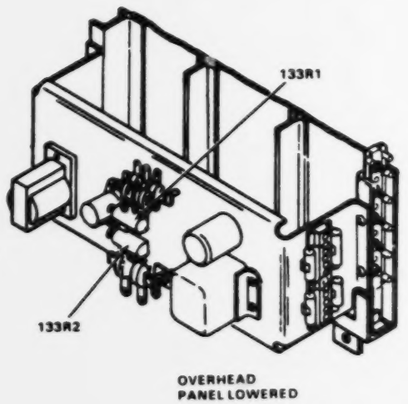












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END OF TASK

12-4.6 WINDSHIELD WIPERS ARE NOISY

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

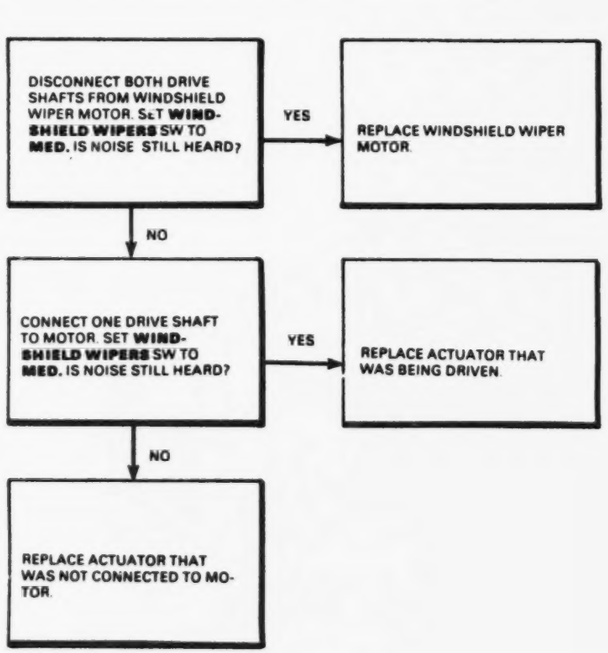
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

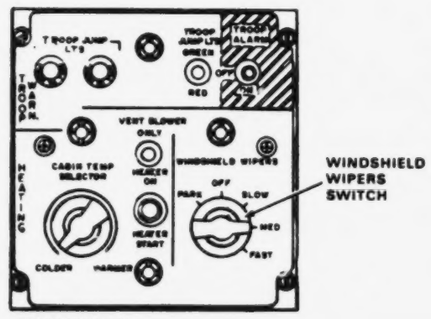
Materials:
None

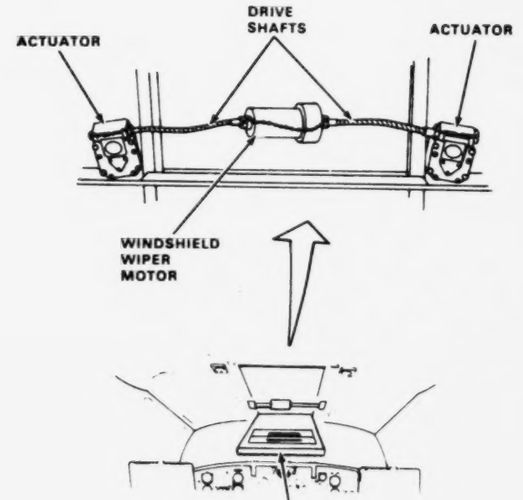
Personnel Required:
67U20 Medium Helicopter Repairer

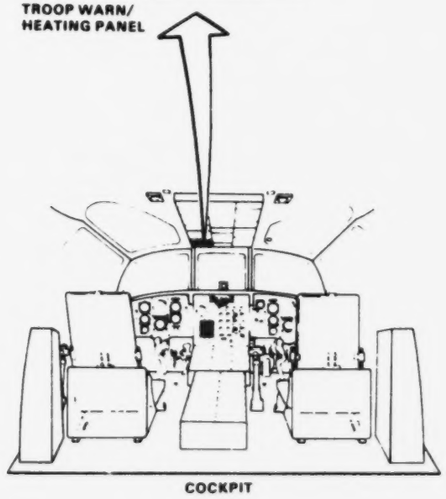
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Overhead Panel Lowered
Windshields Clean And Wet


DISCONNECT BOTH DRIVE SHAFTS FROM WINDSHIELD WIPER MOTOR. SET WINDSHIELD WIPERS SW TO MED. IS NOISE STILL HEARD?
YES
REPLACE WINDSHIELD WIPER MOTOR.
NO
CONNECT ONE DRIVE SHAFT TO MOTOR. SET WINDSHIELD WIPERS SW TO MED. IS NOISE STILL HEARD?
YES
REPLACE ACTUATOR THAT WAS BEING DRIVEN.
NO
REPLACE ACTUATOR THAT WAS NOT CONNECTED TO MOTOR.







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DI45-4930-SPA

END OF TASK

12-4.7 WINDSHIELD WIPERS DO NOT RETURN TO PARK POSITION

F. ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:

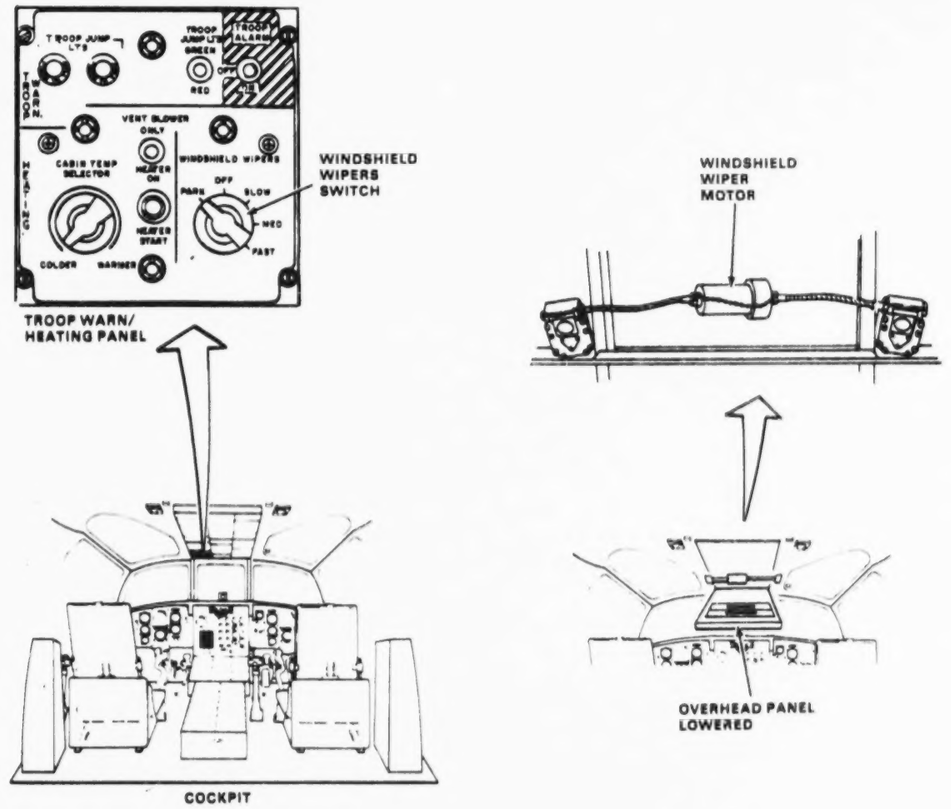
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Overhead Panel Lowered



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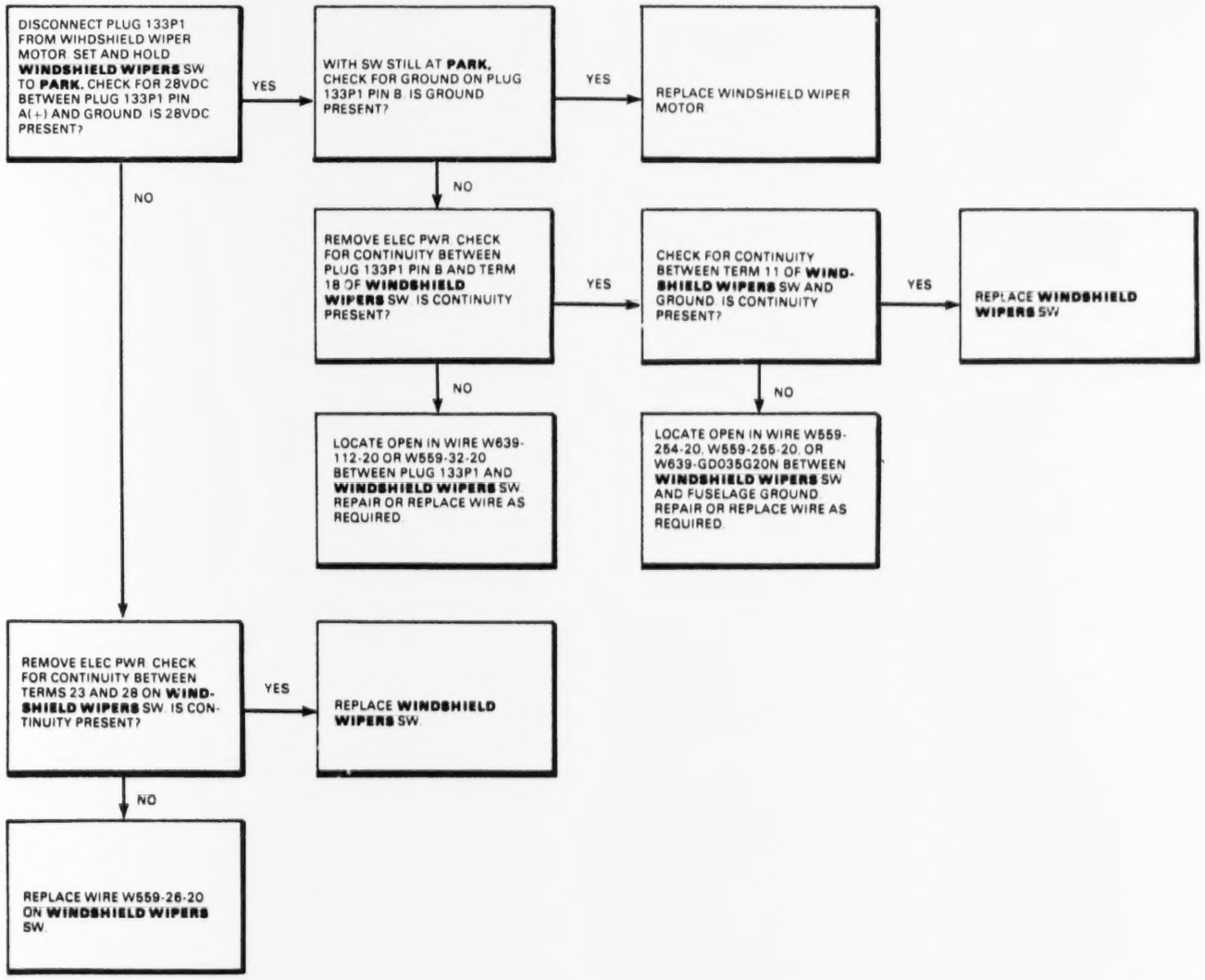
12-4.7 WINDSHIELD WIPERS DO NOT RETURN TO PARK POSITION (Continued)


DISCONNECT PLUG 133P1 FROM WIHDSHIELD WIPER MOTOR. SET AND HOLD **WINDSHIELD WIPERS** SW TO **PARK**. CHECK FOR 28VDC BETWEEN PLUG 133P1 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
WITH SW STILL AT **PARK**, CHECK FOR GROUND ON PLUG 133P1 PIN B. IS GROUND PRESENT?
YES
REPLACE WINDSHIELD WIPER MOTOR.
NO
REMOVE ELEC PWR. CHECK FOR CONTINUITY BETWEEN PLUG 133P1 PIN B AND TERM 18 OF **WINDSHIELD WIPERS** SW. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN TERM 11 OF **WINDSHIELD WIPERS** SW AND GROUND. IS CONTINUITY PRESENT?
YES
REPLACE **WINDSHIELD WIPERS** SW.
NO
LOCATE OPEN IN WIRE W639-112-20 OR W559-32-20 BETWEEN PLUG 133P1 AND **WINDSHIELD WIPERS** SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W559-254-20, W559-255-20, OR W639-GD035G20N BETWEEN **WINDSHIELD WIPERS** SW AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. CHECK FOR CONTINUITY BETWEEN TERMS 23 AND 28 ON **WINDSHIELD WIPERS** SW. IS CONTINUITY PRESENT?
YES
REPLACE **WINDSHIELD WIPERS** SW.
NO
REPLACE WIRE W559-26-20 ON **WINDSHIELD WIPERS** SW.

END OF TASK

CHAPTER 13

ENVIRONMENTAL CONTROL SYSTEM TROUBLESHOOTING

CHAPTER 13
ENVIRONMENTAL CONTROL SYSTEM TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 13 contains procedures for Environmental Control System troubleshooting. Each environmental control system failure symptom is listed below. Included in this Chapter are locations and views of all electrical connectors, receptacles, relays and ground connections for the Environmental Control System.

Refer to TM 55-1520-240-23 for required Environmental Control System maintenance procedures.

SYSTEM	PARA
HEATING AND VENTILATION	13-1

FAILURE SYMPTOM LIST

HEATING AND VENTILATION

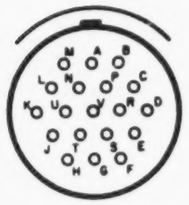
SYMPTOM	TASK
AIR FLOW NOT FELT AT CABIN VENTS	13-1.4
AIR FLOW NOT FELT AT JETTISONABLE DOOR DEFROSTER DUCTS OR NOSE BUBBLE VENTS	13-1.4
AIR FLOW NOT FELT AT PILOT OR COPILOT AIR OUTLET	13-1.4
CABIN HEATER BLOWER CIRCUIT BREAKER WILL NOT STAY CLOSED	13-1.4
CABIN HEATER CONT CIRCUIT BREAKER WILL NOT STAY CLOSED	13-1.4
HEATER DOES NOT PROVIDE WARM AIR	13-1.4
HEATER FAN CANNOT BE HEARD RUNNING	13-1.4
HEATER FAN CANNOT BE HEARD RUNNING AFTER HEATER START SWITCH PRESSED AND RELEASED	13-1.4
HEATER FAN STOPS RUNNING IMMEDIATELY AFTER HEATER FAN SWITCH SET TO OFF	13-1.4
HEATER HOT LIGHT COMES ON	13-1.4
SYSTEM DOES NOT RESPOND TO CHANGES IN CABIN TEMP SELECTOR SETTING	13-1.4

ENVIRONMENTAL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD007		150	HEATER COMPARTMENT	95	5	45R
GD047		150	NO. 2 PDP SIDEWALL			
GD104		151	HEATER COMPARTMENT	95	30	50R
GD107		151	HEATER RELAY BOX — INTERNAL	95	30	25R
GD108		151	HEATER COMPARTMENT	95	5	48R
GD126		151	RH CABIN	330	30	50L
GD160		151	LH CABIN	380	-10	50R
TB 17			WALKWAY — UNDERFLOOR	105	-30	18R
082K1		77	NO. 2 PDP			
082K2		68	HEATER RELAY BOX INTERNAL	95	30	25R
082K3		68	HEATER RELAY BOX INTERNAL	95	30	25R
082K4		65	HEATER RELAY BOX INTERNAL	95	30	25R
082K5		66	HEATER RELAY BOX INTERNAL	95	30	25R
082P1	MS3456W10SL-4S	46	RH AFT POD INTRTANK BAY	374	-5	52R
082P2	MS3456W14S-2S	48	CABIN THERMOSTAT	350	20	50L
082P3	MS3456W14S-6S	50	HEATER TEMP CONT	95	30	25R
082P4	MS3456W14S-5S	49	HEATER FUEL CONT	115	20	45R
082P5	MS3456W10SL-4S	46	HEATER IGN ASSY	100	-10	45R
082P6	MS3456W16-11S	52	HEATER DIFF PRES SW	95	5	20R
082J7	MS3470W14-19P	21	HEATER RELAY BOX — RECPT	95	30	25R
082P7		21	HEATER RELAY BOX	105	30	40R
082P8	MS3456W18-11S		HEATER FAN	105	30	40R
174J6	MS3474W14-19S	21	AIRCRAFT SKIN — INSIDE	374	-10	50R
174P6	MS3476W14-19P	21	AIRCRAFT SKIN — TANK SIDE	374	-10	50R
232P2	MS3476W16-26S	24	CONSOLE — CTR INST PNL — MASTER CAUTION PANEL			
300J4	M83723-74A2461N	43	NO. 1 PDP			
300P4	M83723-75A2461N	43	NO. 1 PDP			
300J5	M83723-74A2041N	40	NO. 2 PDP			
300P5	M83723-75A2041N	40	NO. 2 PDP			
300J15	M83723-74A24617	43	CONSOLE — UNDERFLOOR	85	-20	5R
300P15	M83723-75A24617	43	CONSOLE — UNDERFLOOR	85	-20	5R
300J18	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P18	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J20	M83723-74A2461N	43	OVERHEAD PANEL — COCKPIT			
300P20	M83723-75A2461N	43	OVERHEAD PANEL — COCKPIT			
300J56	M83723-73A2255N	42	HEATER COMPARTMENT OVHD	105	40	30R
300P56	M83723-76A2255N	42	HEATER COMPARTMENT OVHD	105	40	30R
300J68	M83723-76A22556	42	HEATER COMPARTMENT OVHD	105	40	25R
300P68	M83723-73A22556	42	HEATER COMPARTMENT OVHD	105	40	25R

ENVIRONMENTAL CONTROL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE



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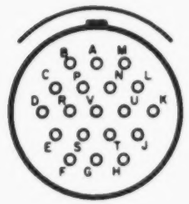

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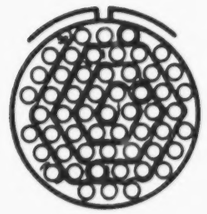

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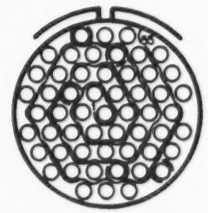

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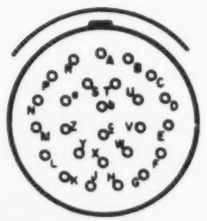

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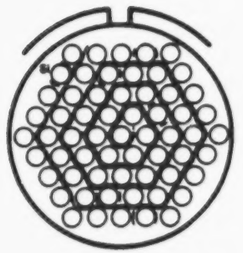

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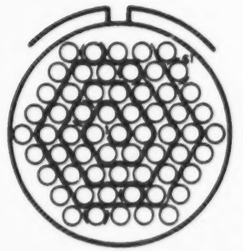

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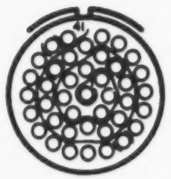

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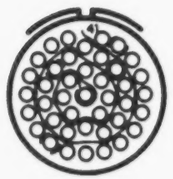

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46

90X94

0148 - 11869 - SPA

ENVIRONMENTAL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

48

PLUG

48

RECEPTACLE

52

PLUG

52

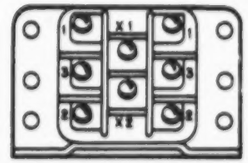
49

49

RELAY

105

RELAY



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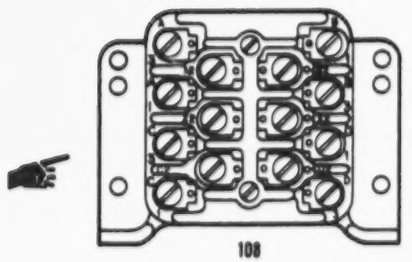

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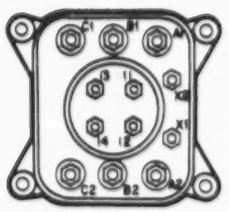

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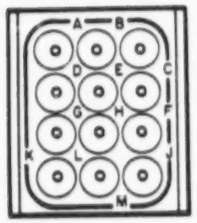
10244

ENVIRONMENTAL CONTROL SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

GND MODULE



150

GND STUD

151

13-1 HEATING AND VENTILATING SYSTEM

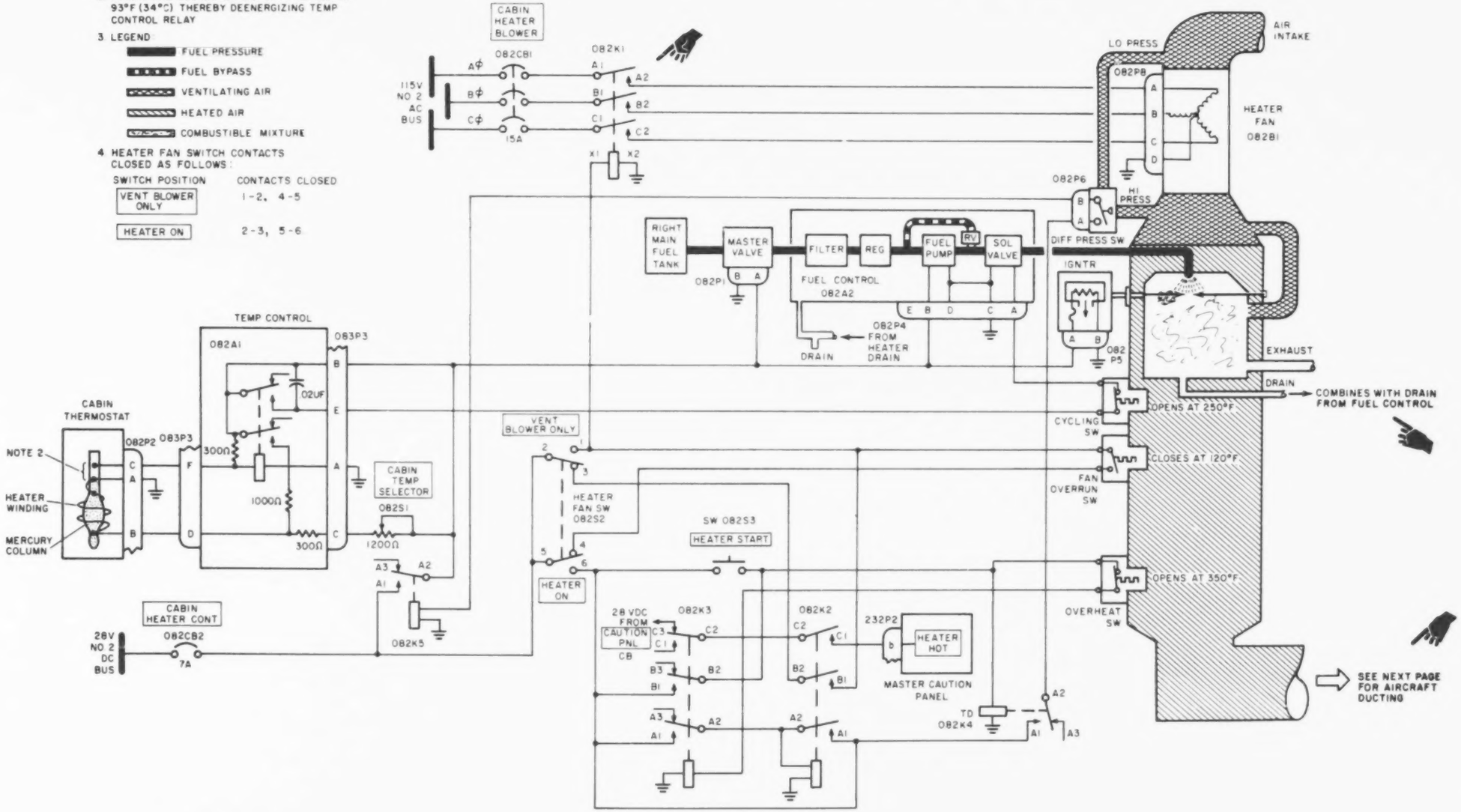
13-1 HEATING AND VENTILATING SYSTEM 13-1

13-1.1 HEATING AND VENTILATING SYSTEM SCHEMATIC 13-1.1

NOTES

1. ONLY LEFT SIDE OF SYSTEM AIR OUTLETS SHOWN
2. POINTS ARE CLOSED BY MERCURY HEATED TO 93°F (34°C) THEREBY DEENERGIZING TEMP CONTROL RELAY
3. LEGEND:
   - FUEL PRESSURE
   - FUEL BYPASS
   - VENTILATING AIR
   - HEATED AIR
   - COMBUSTIBLE MIXTURE
4. HEATER FAN SWITCH CONTACTS CLOSED AS FOLLOWS:

SWITCH POSITION	CONTACTS CLOSED
VENT BLOWER ONLY	1-2, 4-5
HEATER ON	2-3, 5-6



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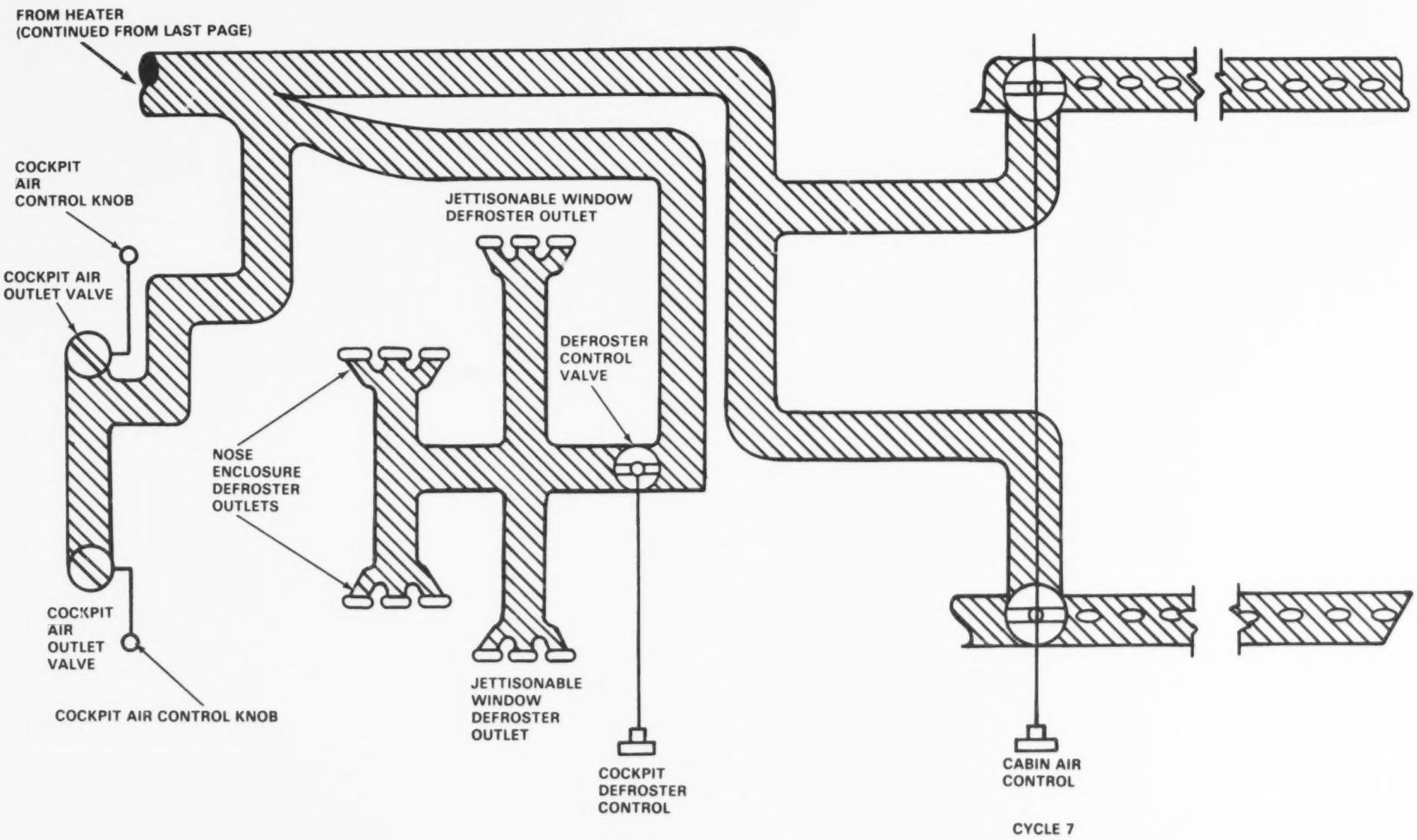
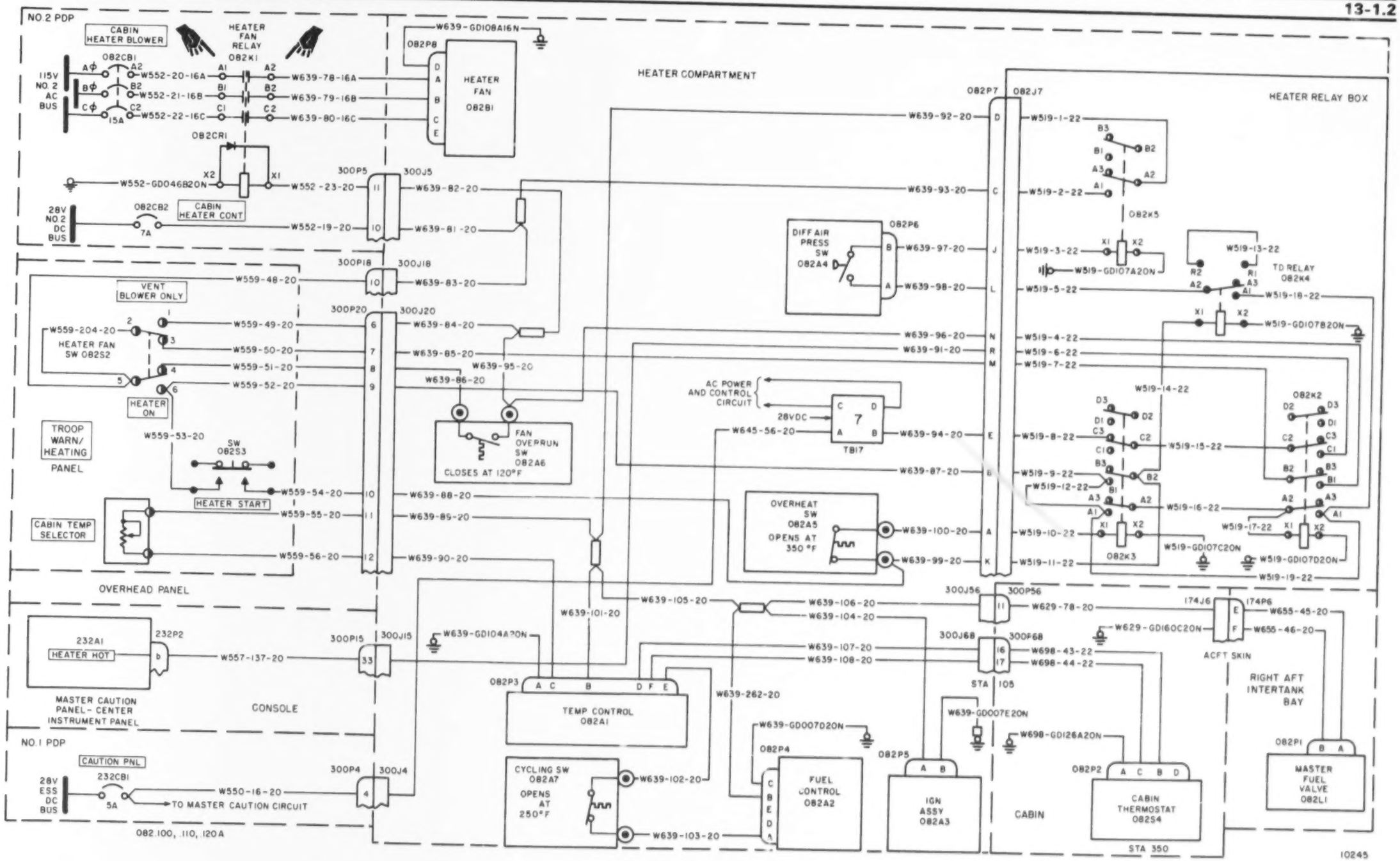

FROM HEATER
(CONTINUED FROM LAST PAGE)
COCKPIT
AIR
CONTROL KNOB
COCKPIT AIR
OUTLET VALVE
JETTISONABLE WINDOW
DEFROSTER OUTLET
DEFROSTER
CONTROL
VALVE
NOSE
ENCLOSURE
DEFROSTER
OUTLETS
COCKPIT
AIR
OUTLET
VALVE
COCKPIT AIR CONTROL KNOB
JETTISONABLE
WINDOW
DEFROSTER
OUTLET
COCKPIT
DEFROSTER
CONTROL
CABIN AIR
CONTROL
CYCLE 7

17332


NO.2 PDP
CABIN HEATER BLOWER
HEATER FAN RELAY
082K1
115V NO.2 AC BUS
082CB1
15A
W552-20-16A
W552-21-16B
W552-22-16C
W639-78-16A
W639-79-16B
W639-80-16C
W639-GD108A16N
082P8
HEATER FAN 082B1
082CR1
W552-GD046B20N
W552-23-20
300P5
300J5
W639-82-20
W639-81-20
28V NO.2 DC BUS
082CB2
7A
CABIN HEATER CONT
W552-19-20
300P18
300J18
W559-48-20
W639-83-20
VENT BLOWER ONLY
HEATER FAN SW 082S2
W559-204-20
W559-49-20
W559-50-20
W559-51-20
W559-52-20
300P20
300J20
W639-84-20
W639-85-20
W639-86-20
W639-95-20
HEATER ON
TROOP WARN/ HEATING PANEL
W559-53-20
SW 082S3
HEATER START
W559-54-20
W559-55-20
W559-56-20
W639-88-20
W639-89-20
W639-90-20
CABIN TEMP SELECTOR
OVERHEAD PANEL
FAN OVERRUN SW 082A6
CLOSES AT 120°F
HEATER COMPARTMENT
082P7
082J7
HEATER RELAY BOX
W639-92-20
W639-93-20
W639-97-20
W639-98-20
DIFF AIR PRESS SW 082A4
082P6
W519-1-22
W519-2-22
W519-3-22
W519-GD107A20N
082K5
W519-13-22
TD RELAY 082K4
W519-5-22
W519-18-22
W519-GD107B20N
W519-4-22
W519-6-22
W519-7-22
W639-96-20
W639-91-20
AC POWER AND CONTROL CIRCUIT
28VDC
W645-56-20
W639-94-20
TBI7
W639-87-20
W519-14-22
W519-8-22
W519-15-22
W519-9-22
W519-12-22
W519-16-22
W519-10-22
W519-11-22
W519-GD107C20N
W519-17-22
W519-GD107D20N
W519-19-22
082K2
082K3
OVERHEAT SW 082A5
OPENS AT 350°F
W639-100-20
W639-99-20
300J56
300P56
W639-106-20
W639-104-20
W639-105-20
W639-101-20
174J6
174P6
W629-78-20
W629-GD160C20N
W655-45-20
W655-46-20
ACFT SKIN
300J68
300P68
W639-107-20
W639-108-20
W698-43-22
W698-44-22
STA 105
RIGHT AFT INTERTANK BAY
232A1
HEATER HOT
232P2
W557-137-20
300P15
300J15
W639-GD104A20N
MASTER CAUTION PANEL- CENTER INSTRUMENT PANEL
CONSOLE
082P3
TEMP CONTROL 082A1
W639-262-20
W639-GD007D20N
W639-GD007E20N
W698-GD126A20N
082P4
082P5
082P1
FUEL CONTROL 082A2
IGN ASSY 082A3
MASTER FUEL VALVE 082L1
082P2
CABIN THERMOSTAT 082S4
CABIN
STA 350
NO.1 PDP
CAUTION PNL
232CB1
28V ESS DC BUS
5A
W550-16-20
TO MASTER CAUTION CIRCUIT
300P4
300J4
CYCLING SW 082A7
OPENS AT 250°F
W639-102-20
W639-103-20
082.100, .110, .120A
10245

13-1.3 HEATING AND VENTILATING SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4892

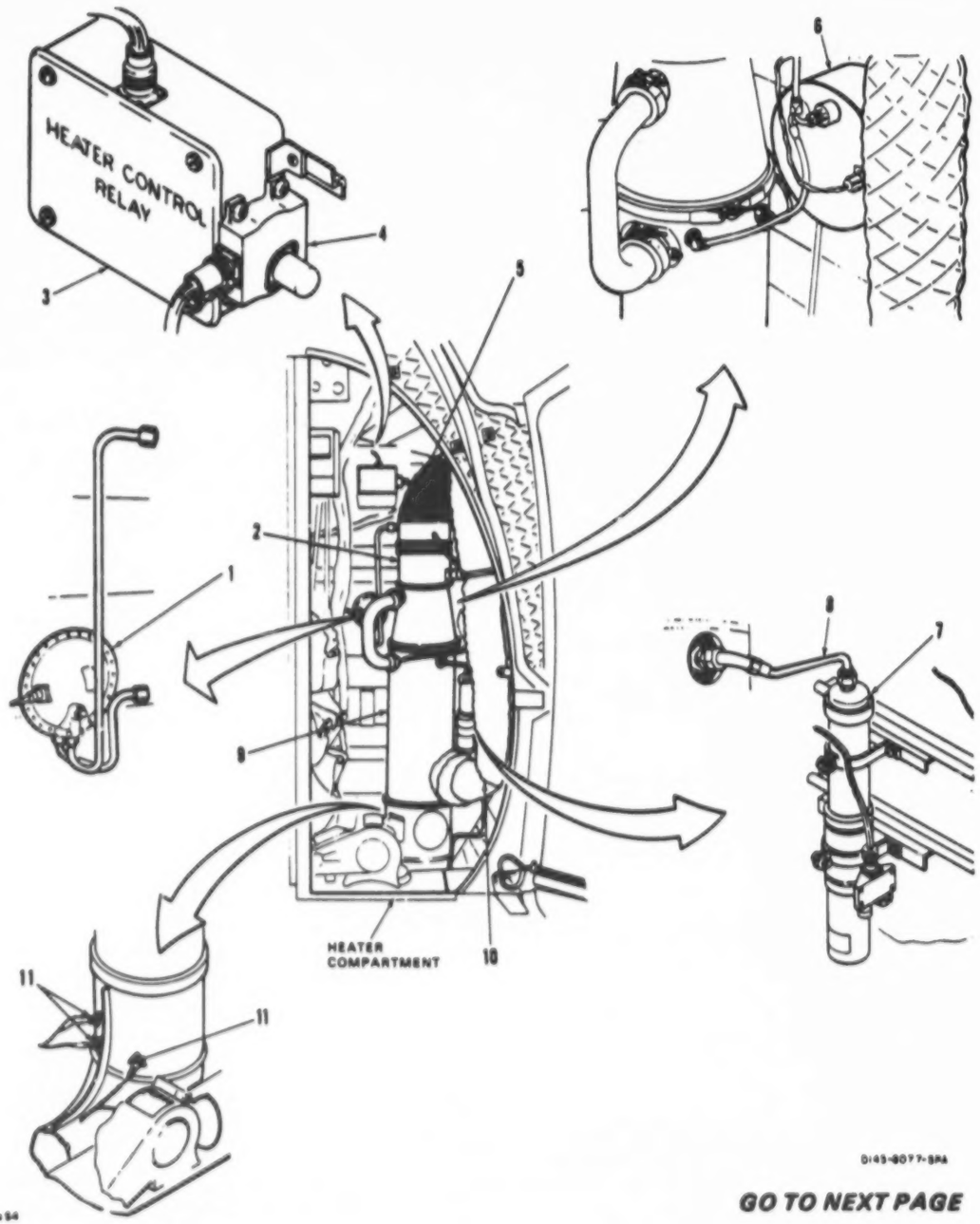
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23

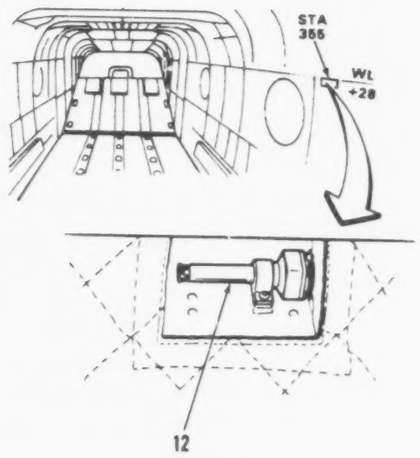
Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic
Blanket Removed

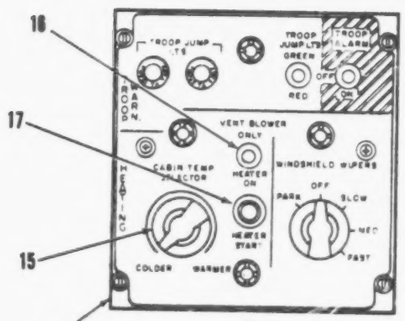
TASK	RESULT
1. **Check air pressure switch (1).**	If switch (1) is loose or damaged, tighten or replace it as required. If tubes, wiring, or electrical connector to switch are damaged, repair or replace them as required.
2. **Check heater fan (2).**	If fan (2) is loose or damaged, tighten or replace it as required. If wiring or electrical connector to fan is damaged, repair or replace it as required.
3. **Check heater control relay box (3).**	If box (3) is loose or damaged, tighten or replace it as required. If wiring or electrical connector to box is damaged, repair or replace it as required.
4. **Check temperature controller (4).**	If controller (4) is loose or damaged, tighten or replace it as required. If wiring or electrical connector to controller is damaged, repair or replace it as required.
5. **Check air inlet duct (5).**	If duct (5) is loose or torn, tighten or replace it as required.
6. **Check heater fuel control (6).**	If control (6) is loose or damaged, tighten or replace it as required. If fuel hoses, wiring or electrical connector to control is damaged, repair or replace it as required.
7. **Check heater ignition unit (7).**	If ignition unit (7) is loose or damaged, tighten or replace it as required. If wiring, electrical connector, or shielded lead (8) to ignition unit is damaged, repair or replace it as required.
8. **Check heater (9).**	If heater (9) is damaged, replace it.
9. **Check exhaust shroud (10).**	If shroud (10) is damaged, repair or replace it as required.
10. **Check three temperature switches (11).**	If any switch (11) is loose or damaged, tighten or replace it as required. If wiring to any switch is damaged, repair or replace it as required.

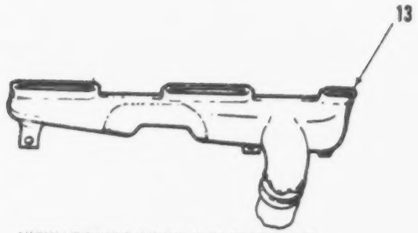


GO TO NEXT PAGE

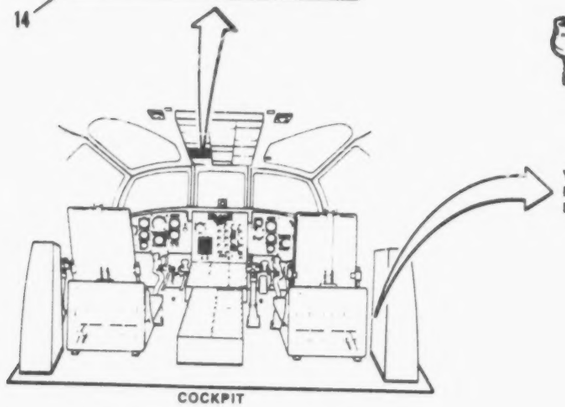
13-1.3 HEATING AND VENTILATING SYSTEM VISUAL CHECK (Continued)







VIEW LOOKING DOWN AND OUTBOARD. PILOT'S JETTISONABLE DOOR DEFROSTER DUCT SHOWN, CC PILOT'S OPPOSITE



COCKPIT

TASK	RESULT
11. **Check cabin thermostat (12).**	If thermostat (12) is loose or damaged, tighten or replace it as required.
12. **Check pilot's jettisonable door defroster (13).**	If defroster (13) is damaged, repair or replace it as required.
13. **Check copilot's jettisonable door defroster (13).**	If defroster (13) is damaged, repair or replace it as required.
14. **Check TROOP WARN/HEATING panel (14).**	If knob (15) is loose, tighten or replace it as required. If switch (16 or 17) is damaged, replace it.

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23
Install heater compartment acoustic blanket.

END OF TASK

13-1.4 HEATING AND VENTILATING SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Stopwatch

Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Air Inlet Protective Shield Removed
Heater Exhaust Outlet Protective Shield Removed
Visual Check of Heating and Ventilating System Performed (Task 13-1.3)

TASK	RESULT
1. **Check** that **CABIN HEATER CONT** circuit breaker (1) is closed.	If circuit breaker (1) is open, close it. If it opens again, go to task 13-1.5.
2. **Check** that **CABIN HEATER BLOWER circuit breaker (2)** is closed.	If circuit breaker (2) is open, close it. If it opens again, go to task 13-1.6.
WARNING **Cockpit vents must be closed before vent blower or heater is started. After blower or heater is started open vents slowly to prevent dirt and debris being blasted into air and eyes of personnel.**	
3. **Check** that **DEFOG or DEFROST AIR CONTROL handle (3)** is all way down.	If handle (3) is up, push it down.
4. **Check** that **PULL FOR COCKPIT AIR knob (4)** on pilot and copilot instrument panel is against panel.	If either knob (4) is out, push it in.
5. **Set RIGHT SIDE FWD and AFT MAIN FUEL PUMPS switches (5 and 6) to ON.**	R FUEL PRESS capsule (7) shall go out. If it stays on, go to task 10-2.4.
6. **Set heater fan switch (8) to VENT.**	Heater fan shall run. If it can not be heard, go to task 13-1.7.
7. **Slowly pull out DEFOG or DEFROST AIR CONTROL handle (3).**	Air shall be felt flowing from pilot and copilot jettisonable door defroster ducts (9) and nose bubble vents (10). If air flow is not felt at ducts or vents, go to task 13-1.8.
8. **Slowly pull out PULL FOR COCKPIT AIR knob (4)** on pilot's instrument panel.	Air shall be felt flowing from pilot's outlet (11). If air flow is not felt, go to task 13-1.9.

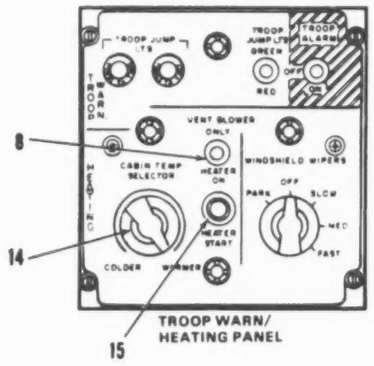
TASK	RESULT
9. **Slowly pull out PULL FOR COCKPIT AIR knob (4)** on copilot's instrument panel.	Air shall be felt flowing from copilot's outlet (11). If air flow is not felt, go to task 13-1.9.
10. **Slowly pull out CABIN AIR AIR CONTROL handle (12).**	Air shall be felt flowing out cabin vents (13). If air flow is not felt, go to task 13-1.10.
11. **Set heater fan switch (8) to HEATER ON.**	Heater fan shall stop.
12. **Turn CABIN TEMP SELECTOR knob (14) to WARMER.**	
13. **Press and release HEATER START switch (15).** **NOTE** Heater will not operate if cabin thermostat senses a temperature of 34°C (93°F) or greater.	Heater fan shall be heard. After about 10 seconds, combustion shall occur and warm air shall flow from all vents and ducts. If heater fan can not be heard, go to task 13-1.11. If heater fan is running but warm air is not flowing from ducts or vents, go to task 13-1.12. If HEATER HOT capsule (16) comes on, go to task 13-1.13.
14. **Turn CABIN TEMP SELECTOR (14) to COLDER position.**	Cooler air shall be felt flowing from ducts and vents. If air doesn't get cooler or air gets hotter, go to task 13-1.14.
15. **Set heater fan switch (8) to off (center).**	Heater fan shall run until heater cools down. If fan is not running after heater is turned off, go to task 13-1.15.
16. **Set RIGHT SIDE FWD and AFT MAIN FUEL PUMP switches (5 and 6) to OFF.**	

FOLLOW-ON MAINTENANCE:

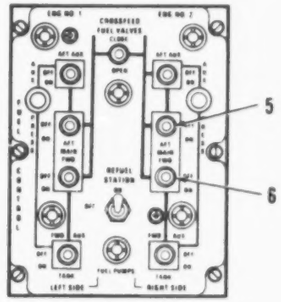
TM 55-1520-240-23:
Electrical Power Off
Battery Disconnected

GO TO NEXT PAGE

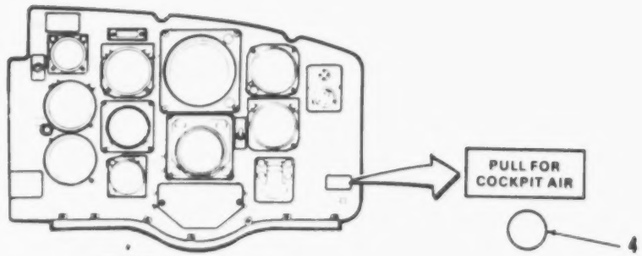
13-1.4 HEATING AND VENTILATING SYSTEM OPERATIONAL CHECK (Continued)



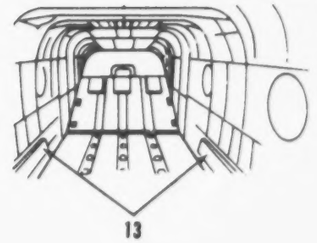
TROOP WARN/ HEATING PANEL



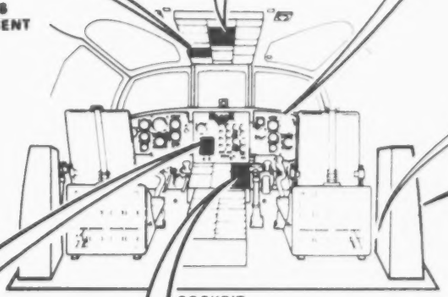
FUEL CONTROL PANEL



PILOT'S INSTRUMENT PANEL SHOWN COPILOT'S PANEL OPPOSITE

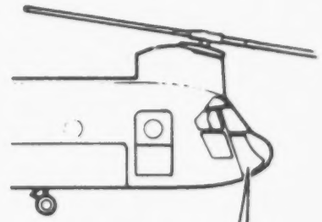


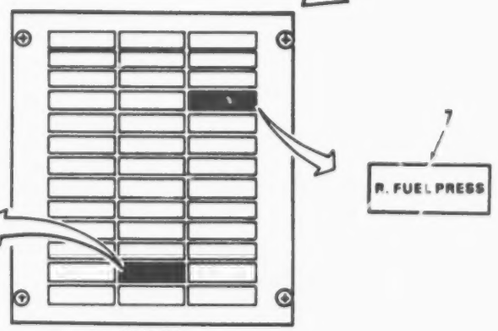
COPILOT'S INSTRUMENT PANEL



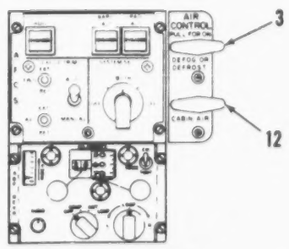
COCKPIT

VIEW LOOKING DOWN AND OUTBOARD. PILOT'S JETTISONABLE DOOR DEFROSTER DUCT SHOWN, COPILOT'S OPPOSITE

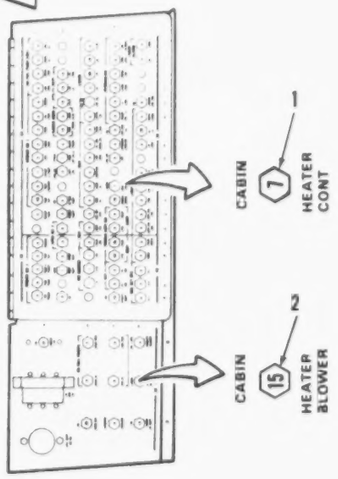




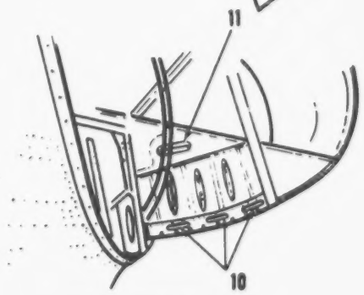
MASTER CAUTION PANEL



RIGHT SIDE OF CONSOLE



NO. 2 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



VIEW LOOKING THROUGH RIGHT NOSE BUBBLE WINDOW. LEFT NOSE BUBBLE WINDOW VIEW OPPOSITE.

90x54

D145-8079-SPA

END OF TASK

13-1.5 CABIN HEATER CONT CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

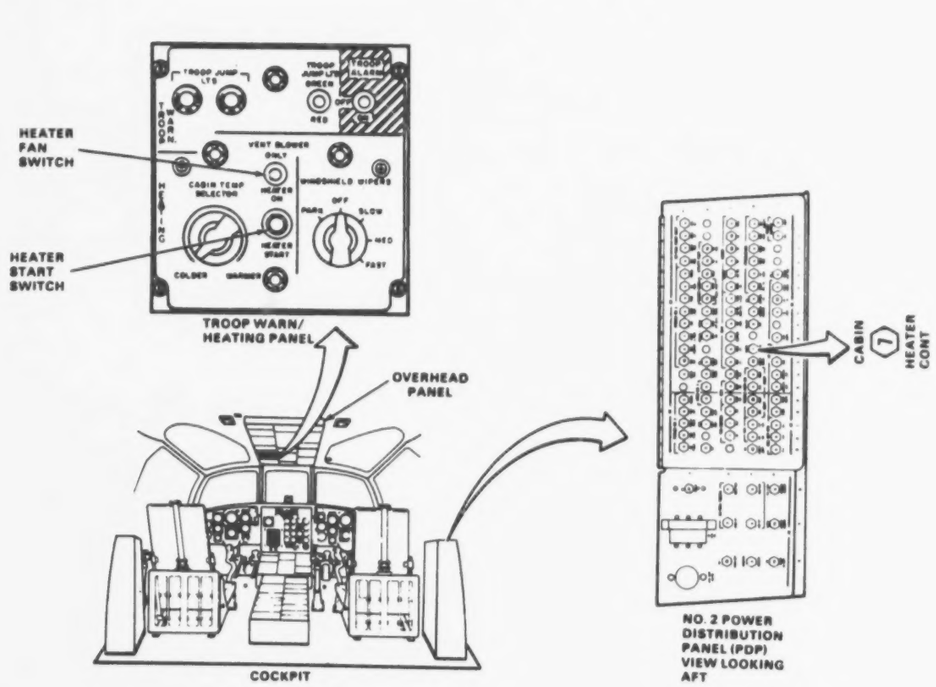
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

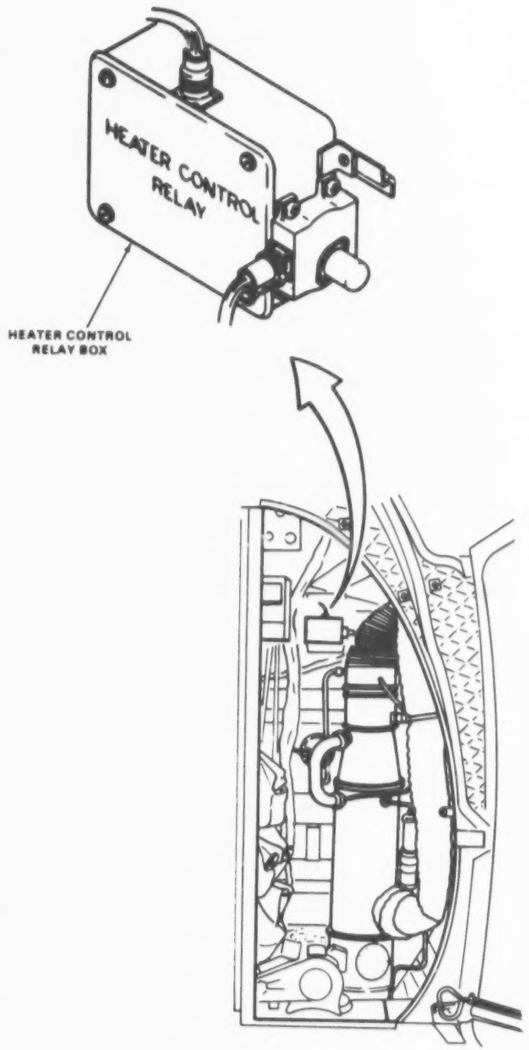
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-20:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed





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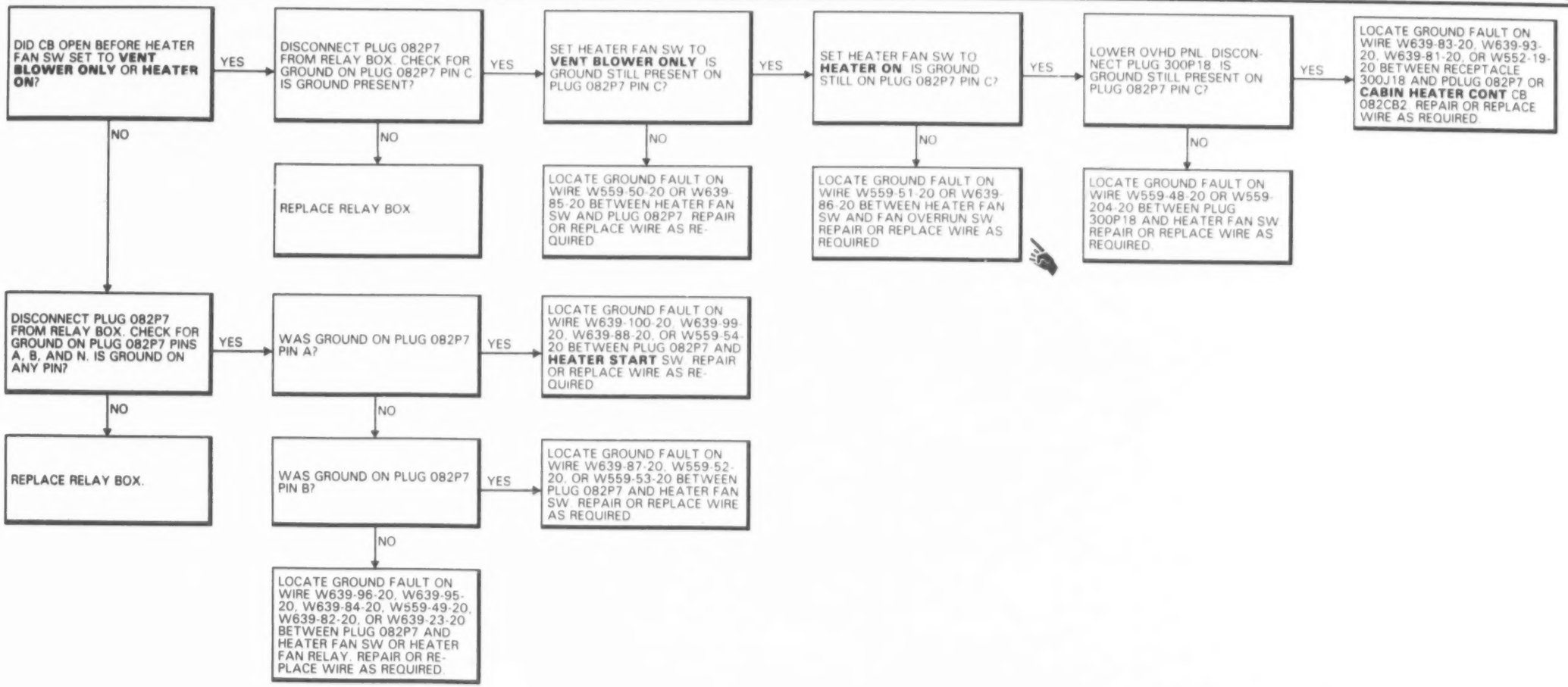
13-1.5 CABIN HEATER CONT CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DID CB OPEN BEFORE HEATER FAN SW SET TO **VENT BLOWER ONLY** OR **HEATER ON**?
YES
DISCONNECT PLUG 082P7 FROM RELAY BOX. CHECK FOR GROUND ON PLUG 082P7 PIN C. IS GROUND PRESENT?
YES
SET HEATER FAN SW TO **VENT BLOWER ONLY**. IS GROUND STILL PRESENT ON PLUG 082P7 PIN C?
YES
SET HEATER FAN SW TO **HEATER ON**. IS GROUND STILL ON PLUG 082P7 PIN C?
YES
LOWER OVHD PNL. DISCONNECT PLUG 300P18. IS GROUND STILL PRESENT ON PLUG 082P7 PIN C?
YES
LOCATE GROUND FAULT ON WIRE W639-83-20, W639-93-20, W639-81-20, OR W552-19-20 BETWEEN RECEPTACLE 300J18 AND PDLUG 082P7 OR **CABIN HEATER CONT** CB 082CB2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY BOX.
NO
LOCATE GROUND FAULT ON WIRE W559-50-20 OR W639-85-20 BETWEEN HEATER FAN SW AND PLUG 082P7. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W559-51-20 OR W639-86-20 BETWEEN HEATER FAN SW AND FAN OVERRUN SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W559-48-20 OR W559-204-20 BETWEEN PLUG 300P18 AND HEATER FAN SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 082P7 FROM RELAY BOX. CHECK FOR GROUND ON PLUG 082P7 PINS A, B, AND N. IS GROUND ON ANY PIN?
YES
WAS GROUND ON PLUG 082P7 PIN A?
YES
LOCATE GROUND FAULT ON WIRE W639-100-20, W639-99-20, W639-88-20, OR W559-54-20 BETWEEN PLUG 082P7 AND **HEATER START** SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY BOX.
NO
WAS GROUND ON PLUG 082P7 PIN B?
YES
LOCATE GROUND FAULT ON WIRE W639-87-20, W559-52-20, OR W559-53-20 BETWEEN PLUG 082P7 AND HEATER FAN SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W639-96-20, W639-95-20, W639-84-20, W559-49-20, W639-82-20, OR W639-23-20 BETWEEN PLUG 082P7 AND HEATER FAN SW OR HEATER FAN RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

13-1.6 CABIN HEATER BLOWER CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

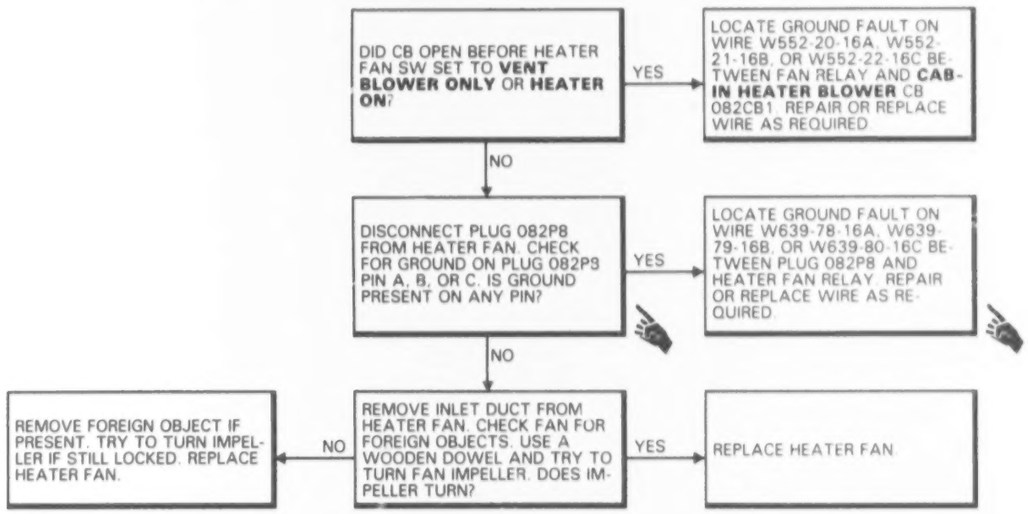
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

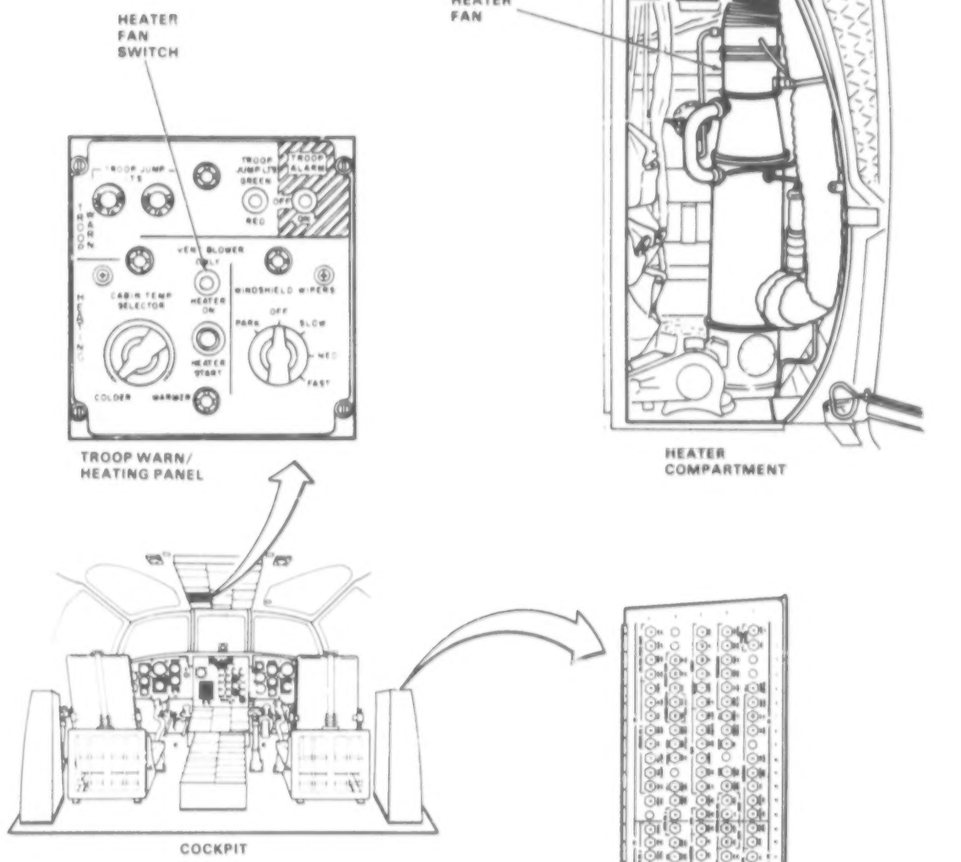
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed


DID CB OPEN BEFORE HEATER FAN SW SET TO **VENT BLOWER ONLY** OR **HEATER ON**?
YES
LOCATE GROUND FAULT ON WIRE W552-20-16A, W552-21-16B, OR W552-22-16C BETWEEN FAN RELAY AND **CABIN HEATER BLOWER** CB 082CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 082P8 FROM HEATER FAN. CHECK FOR GROUND ON PLUG 082P8 PIN A, B, OR C. IS GROUND PRESENT ON ANY PIN?
YES
LOCATE GROUND FAULT ON WIRE W639-78-16A, W639-79-16B, OR W639-80-16C BETWEEN PLUG 082P8 AND HEATER FAN RELAY. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE INLET DUCT FROM HEATER FAN. CHECK FAN FOR FOREIGN OBJECTS. USE A WOODEN DOWEL AND TRY TO TURN FAN IMPELLER. DOES IMPELLER TURN?
NO
REMOVE FOREIGN OBJECT IF PRESENT. TRY TO TURN IMPELLER IF STILL LOCKED. REPLACE HEATER FAN.
YES
REPLACE HEATER FAN.



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END OF TASK

13-1.7 HEATER FAN CANNOT BE HEARD RUNNING

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

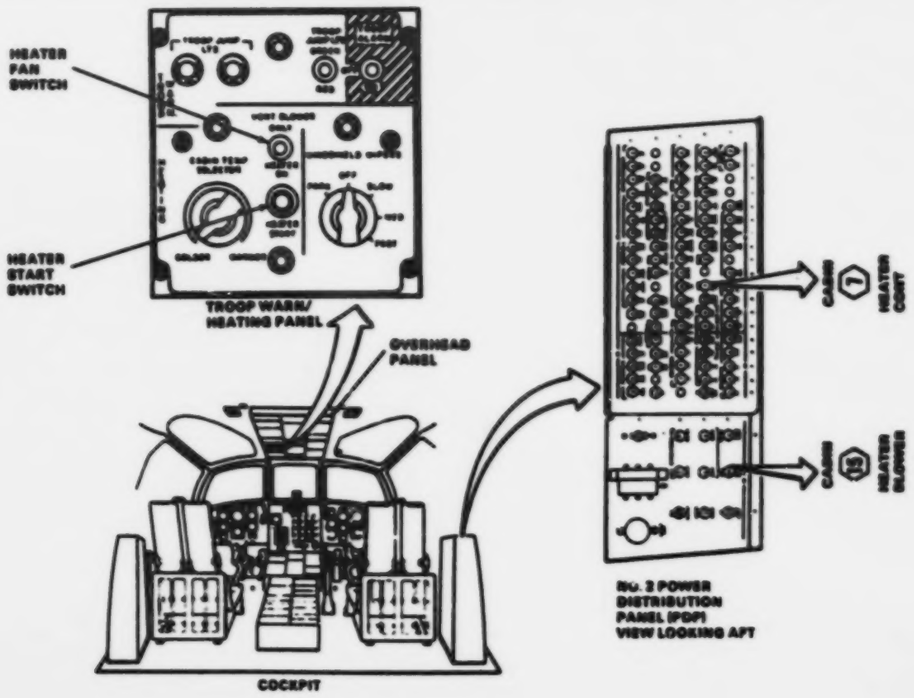
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

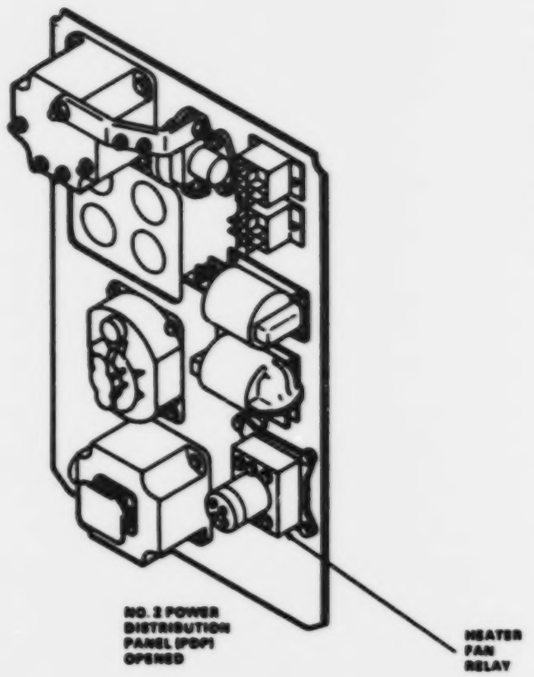
Materials:
None

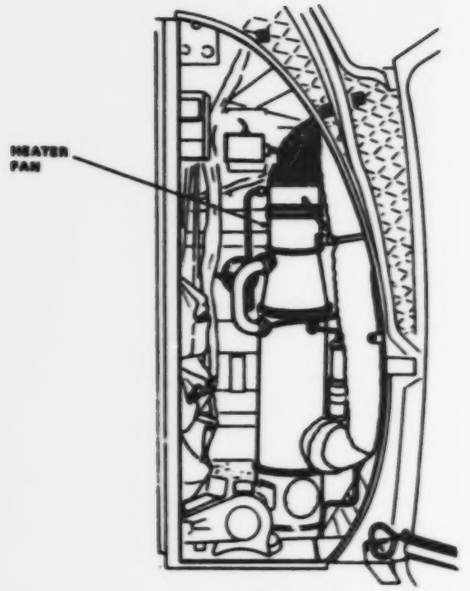
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed







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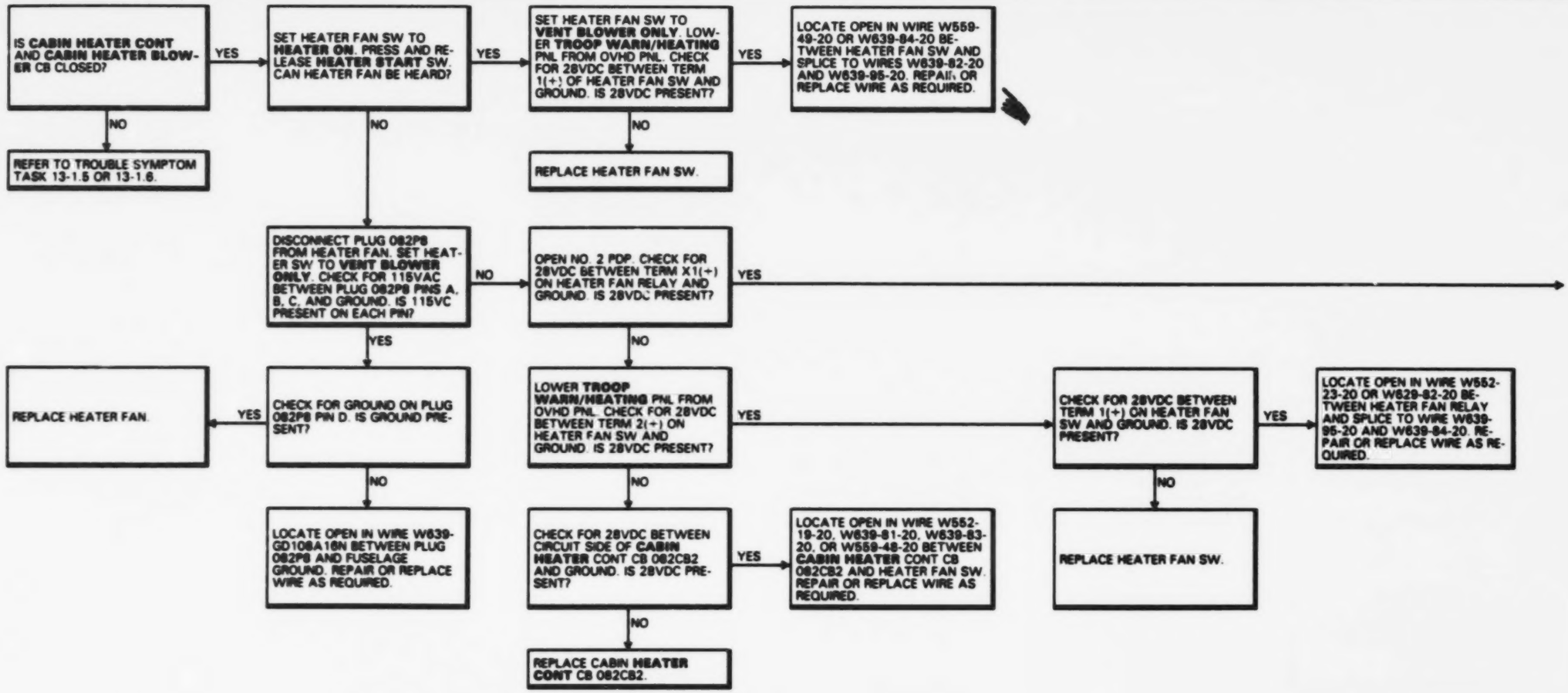
IS CABIN HEATER CONT AND CABIN HEATER BLOWER CB CLOSED?
YES
NO
REFER TO TROUBLE SYMPTOM TASK 13-1.5 OR 13-1.6.
SET HEATER FAN SW TO HEATER ON. PRESS AND RELEASE HEATER START SW. CAN HEATER FAN BE HEARD?
YES
NO
SET HEATER FAN SW TO VENT BLOWER ONLY. LOWER TROOP WARN/HEATING PNL FROM OVHD PNL. CHECK FOR 28VDC BETWEEN TERM 1(+) OF HEATER FAN SW AND GROUND. IS 28VDC PRESENT?
YES
NO
REPLACE HEATER FAN SW.
LOCATE OPEN IN WIRE W559-49-20 OR W639-84-20 BETWEEN HEATER FAN SW AND SPLICE TO WIRES W639-82-20 AND W639-95-20. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 082P8 FROM HEATER FAN. SET HEATER SW TO VENT BLOWER ONLY. CHECK FOR 115VAC BETWEEN PLUG 082P8 PINS A, B, C, AND GROUND. IS 115VC PRESENT ON EACH PIN?
NO
YES
OPEN NO. 2 PDP. CHECK FOR 28VDC BETWEEN TERM X1(+) ON HEATER FAN RELAY AND GROUND. IS 28VDC PRESENT?
YES
NO
REPLACE HEATER FAN.
YES
CHECK FOR GROUND ON PLUG 082P8 PIN D. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W639-GD108A16N BETWEEN PLUG 082P8 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
LOWER TROOP WARN/HEATING PNL FROM OVHD PNL. CHECK FOR 28VDC BETWEEN TERM 2(+) ON HEATER FAN SW AND GROUND. IS 28VDC PRESENT?
YES
NO
CHECK FOR 28VDC BETWEEN CIRCUIT SIDE OF CABIN HEATER CONT CB 082CB2 AND GROUND. IS 28VDC PRESENT?
YES
NO
REPLACE CABIN HEATER CONT CB 082CB2.
LOCATE OPEN IN WIRE W552-19-20, W639-81-20, W639-83-20, OR W559-48-20 BETWEEN CABIN HEATER CONT CB 082CB2 AND HEATER FAN SW. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28VDC BETWEEN TERM 1(+) ON HEATER FAN SW AND GROUND. IS 28VDC PRESENT?
YES
NO
REPLACE HEATER FAN SW.
LOCATE OPEN IN WIRE W552-23-20 OR W629-82-20 BETWEEN HEATER FAN RELAY AND SPLICE TO WIRE W639-95-20 AND W639-84-20. REPAIR OR REPLACE WIRE AS REQUIRED.

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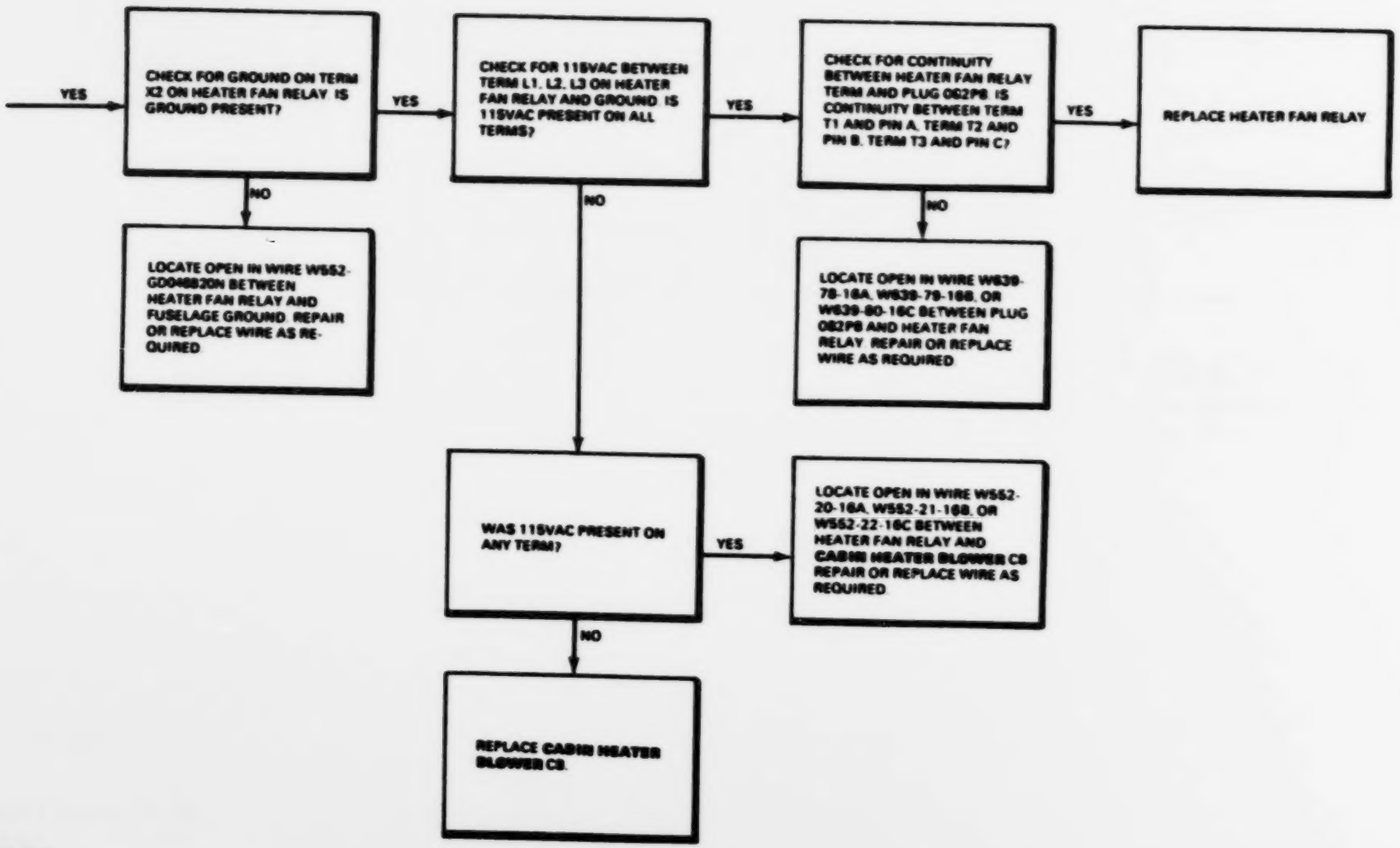
13-1.7 HEATER FAN CANNOT BE HEARD RUNNING (Continued)


YES
CHECK FOR GROUND ON TERM X2 ON HEATER FAN RELAY. IS GROUND PRESENT?
YES
CHECK FOR 115VAC BETWEEN TERM L1, L2, L3 ON HEATER FAN RELAY AND GROUND. IS 115VAC PRESENT ON ALL TERMS?
YES
CHECK FOR CONTINUITY BETWEEN HEATER FAN RELAY TERM AND PLUG 062P8. IS CONTINUITY BETWEEN TERM T1 AND PIN A, TERM T2 AND PIN B, TERM T3 AND PIN C?
YES
REPLACE HEATER FAN RELAY
NO
LOCATE OPEN IN WIRE W552-GD048820N BETWEEN HEATER FAN RELAY AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W639-79-16A, W639-79-16B, OR W639-80-16C BETWEEN PLUG 062P8 AND HEATER FAN RELAY. REPAIR OR REPLACE WIRE AS REQUIRED
NO
WAS 115VAC PRESENT ON ANY TERM?
YES
LOCATE OPEN IN WIRE W552-20-16A, W552-21-16B, OR W552-22-16C BETWEEN HEATER FAN RELAY AND CABIN HEATER BLOWER C8. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE CABIN HEATER BLOWER C8.

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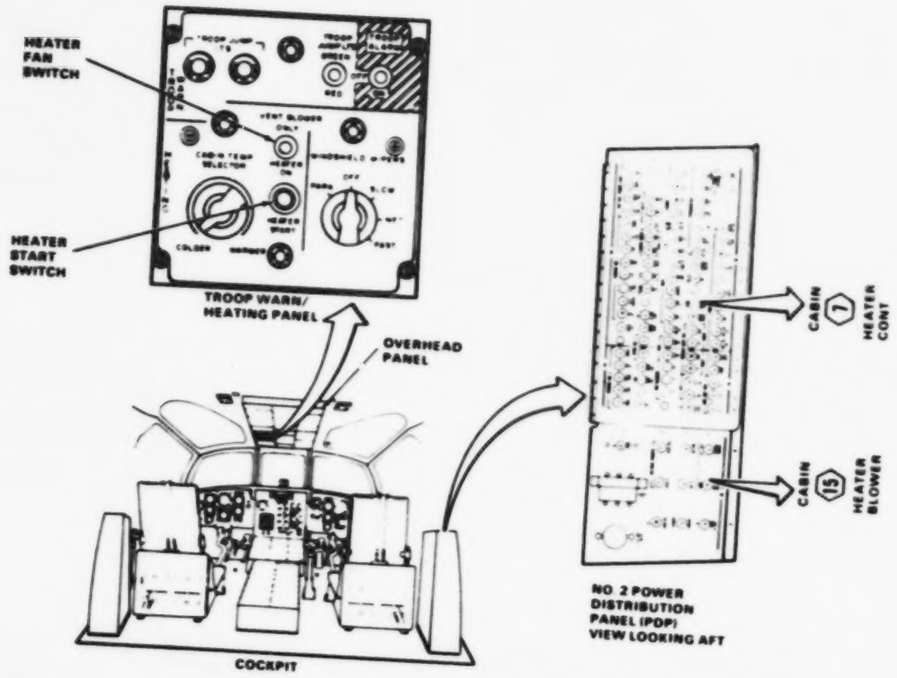
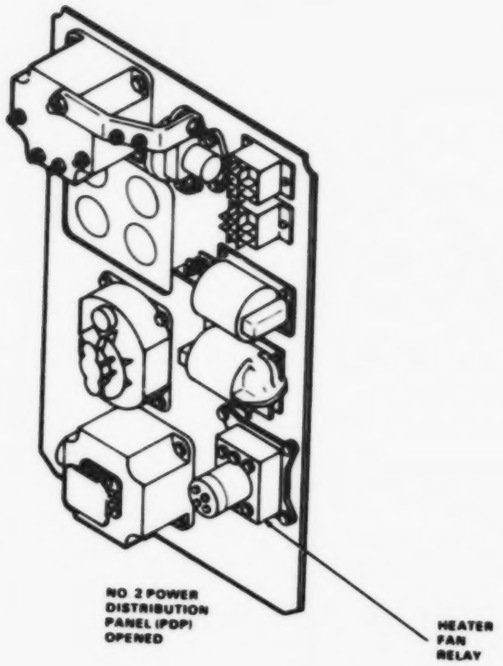
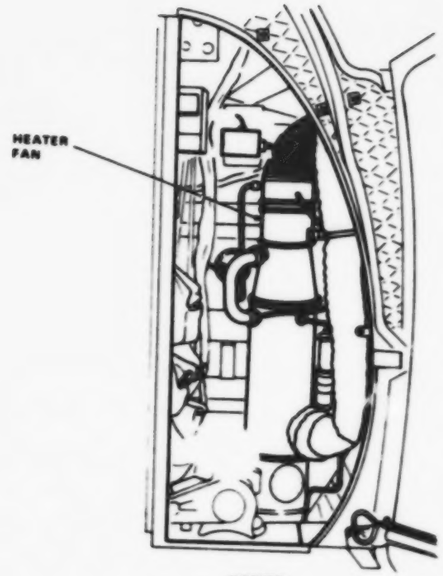
13-1.7 HEATER FAN CANNOT BE HEARD RUNNING (Continued)







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D145-10020-SPA

END OF TASK

13-1.8 AIR FLOW NOT FELT AT JETTISONABLE DOOR DEFROSTER DUCTS OR NOSE BUBBLE VENTS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

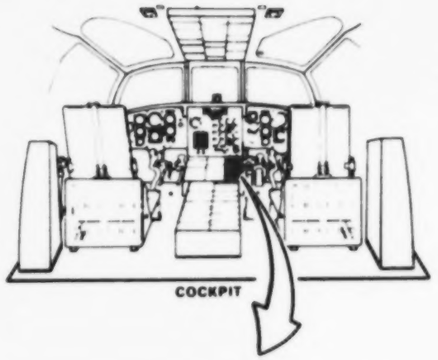
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

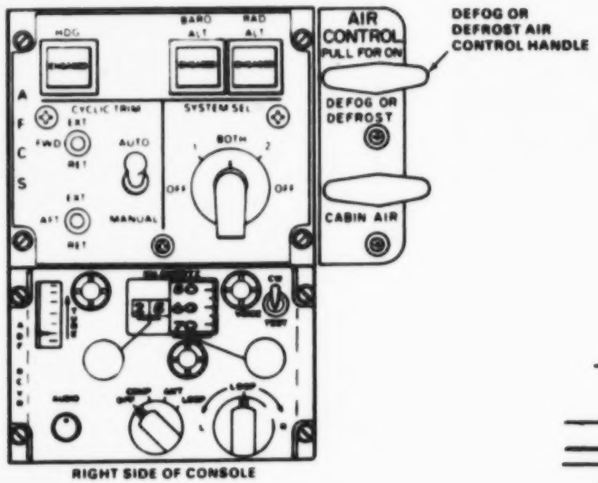
Materials:
None

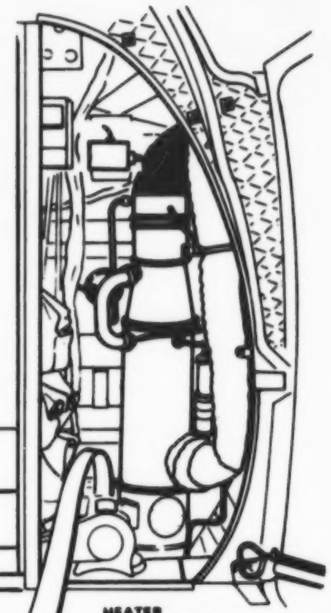
Personnel Required:
67U20 Medium Helicopter Repairer

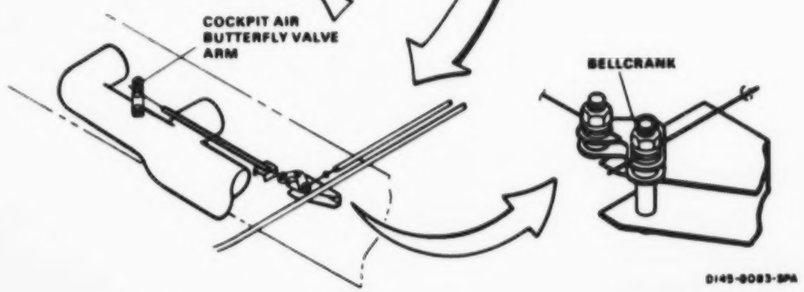
References:
TM 55-1520-240-23

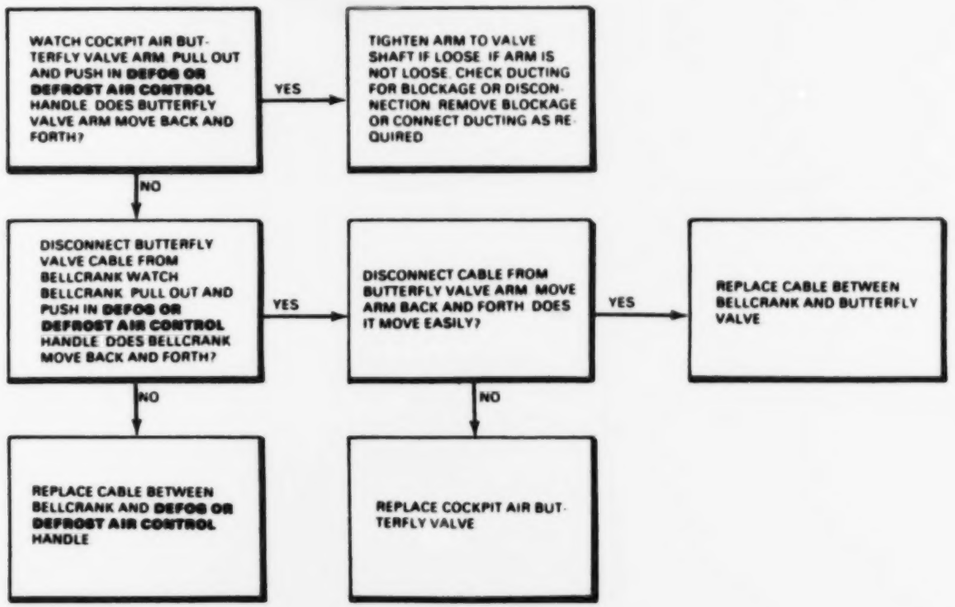
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Passageway Floor Removed
Heater Compartment Acoustic Blanket Removed










WATCH COCKPIT AIR BUTTERFLY VALVE ARM. PULL OUT AND PUSH IN DEFOG OR DEFROST AIR CONTROL HANDLE. DOES BUTTERFLY VALVE ARM MOVE BACK AND FORTH?
YES
TIGHTEN ARM TO VALVE SHAFT IF LOOSE. IF ARM IS NOT LOOSE, CHECK DUCTING FOR BLOCKAGE OR DISCONNECTION. REMOVE BLOCKAGE OR CONNECT DUCTING AS REQUIRED
NO
DISCONNECT BUTTERFLY VALVE CABLE FROM BELLCRANK. WATCH BELLCRANK. PULL OUT AND PUSH IN DEFOG OR DEFROST AIR CONTROL HANDLE. DOES BELLCRANK MOVE BACK AND FORTH?
YES
DISCONNECT CABLE FROM BUTTERFLY VALVE ARM. MOVE ARM BACK AND FORTH. DOES IT MOVE EASILY?
YES
REPLACE CABLE BETWEEN BELLCRANK AND BUTTERFLY VALVE
NO
REPLACE CABLE BETWEEN BELLCRANK AND DEFOG OR DEFROST AIR CONTROL HANDLE
NO
REPLACE COCKPIT AIR BUTTERFLY VALVE

45-54

END OF TASK

13-1.9 AIR FLOW NOT FELT AT PILOT OR COPILOT AIR OUTLET

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

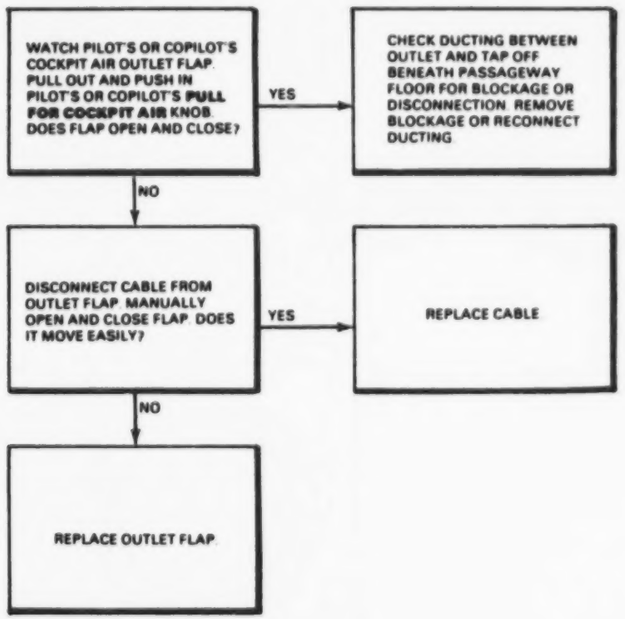
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

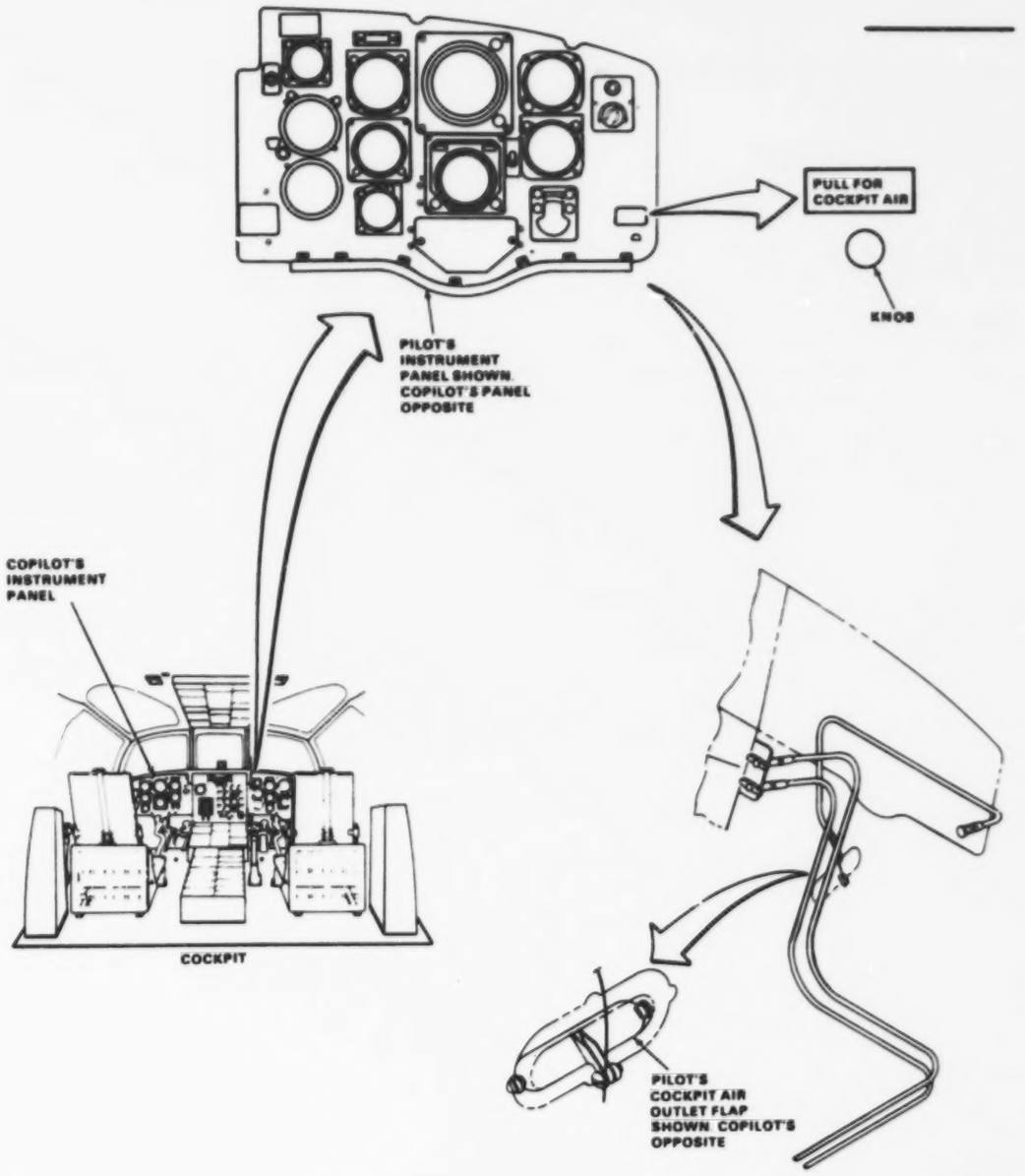
Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


WATCH PILOT'S OR COPILOT'S COCKPIT AIR OUTLET FLAP. PULL OUT AND PUSH IN PILOT'S OR COPILOT'S PULL FOR COCKPIT AIR KNOB. DOES FLAP OPEN AND CLOSE?
YES
CHECK DUCTING BETWEEN OUTLET AND TAP OFF BENEATH PASSAGEWAY FLOOR FOR BLOCKAGE OR DISCONNECTION. REMOVE BLOCKAGE OR RECONNECT DUCTING
NO
DISCONNECT CABLE FROM OUTLET FLAP. MANUALLY OPEN AND CLOSE FLAP. DOES IT MOVE EASILY?
YES
REPLACE CABLE
NO
REPLACE OUTLET FLAP


PULL FOR COCKPIT AIR
KNOB
PILOT'S INSTRUMENT PANEL SHOWN. COPILOT'S PANEL OPPOSITE
COPILOT'S INSTRUMENT PANEL
COCKPIT
PILOT'S COCKPIT AIR OUTLET FLAP SHOWN. COPILOT'S OPPOSITE

D165-8084-3PA

END OF TASK

13-1.10 AIR FLOW NOT FELT AT CABIN VENTS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

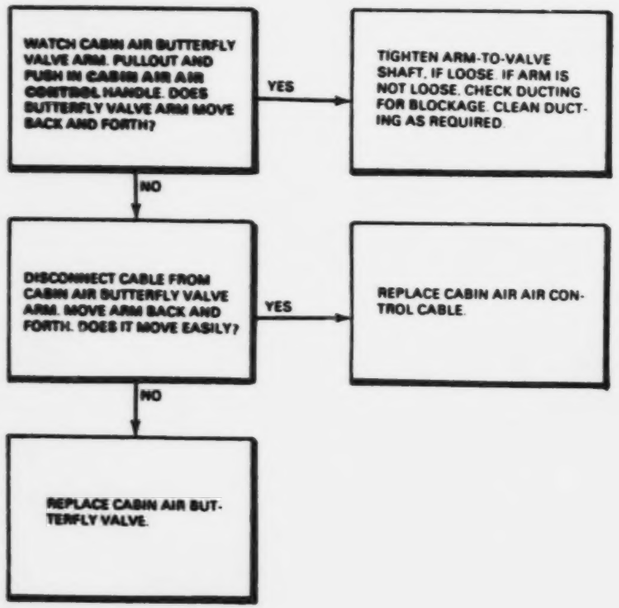
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

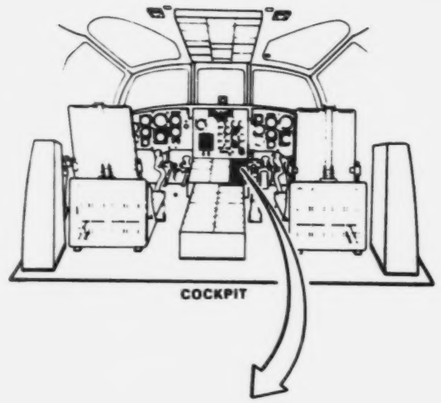
Materials:
None

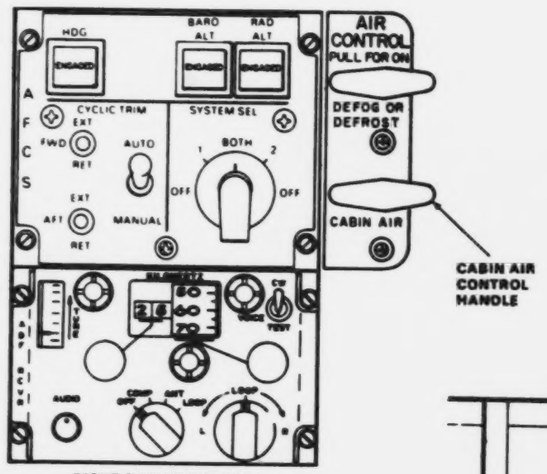
Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

References:
TM 55-1520-240-23

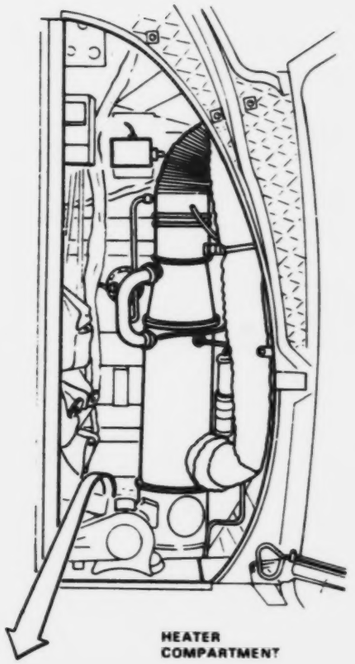
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

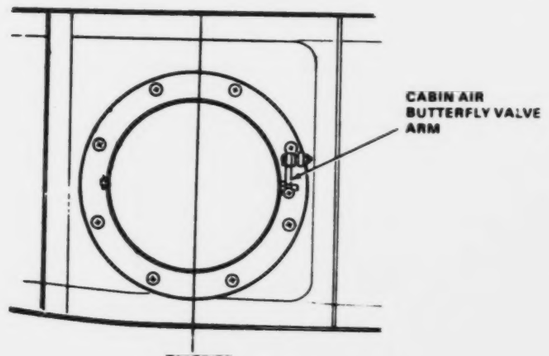

WATCH CABIN AIR BUTTERFLY VALVE ARM. PULLOUT AND PUSH IN CABIN AIR AIR CONTROL HANDLE. DOES BUTTERFLY VALVE ARM MOVE BACK AND FORTH?
YES
TIGHTEN ARM-TO-VALVE SHAFT, IF LOOSE. IF ARM IS NOT LOOSE, CHECK DUCTING FOR BLOCKAGE. CLEAN DUCTING AS REQUIRED.
NO
DISCONNECT CABLE FROM CABIN AIR BUTTERFLY VALVE ARM. MOVE ARM BACK AND FORTH. DOES IT MOVE EASILY?
YES
REPLACE CABIN AIR AIR CONTROL CABLE.
NO
REPLACE CABIN AIR BUTTERFLY VALVE.





RIGHT SIDE OF CONSOLE





VIEW LOOKING AFT AT STA 120

45-54

D145-8087-SPA

END OF TASK

13-1.11 HEATER FAN CAN NOT BE HEARD RUNNING AFTER HEATER START SWITCH PRESSED AND RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

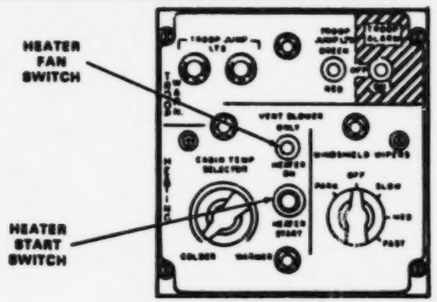
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

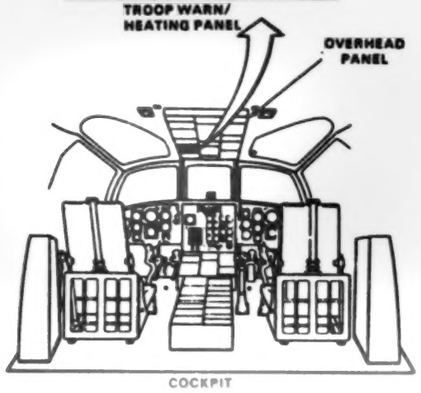
Materials:
None

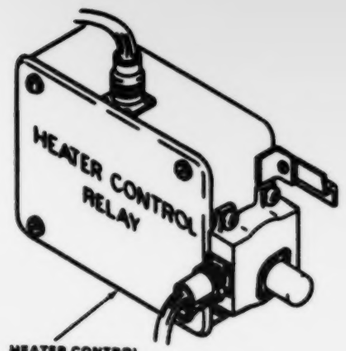
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

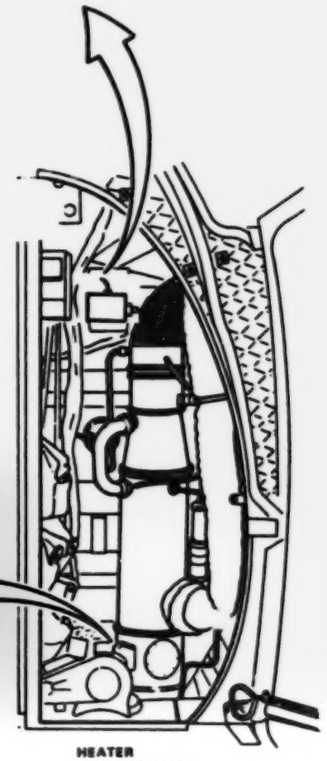
References:
TM 55-1520-240-23

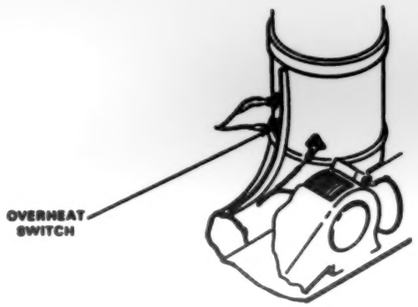
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed











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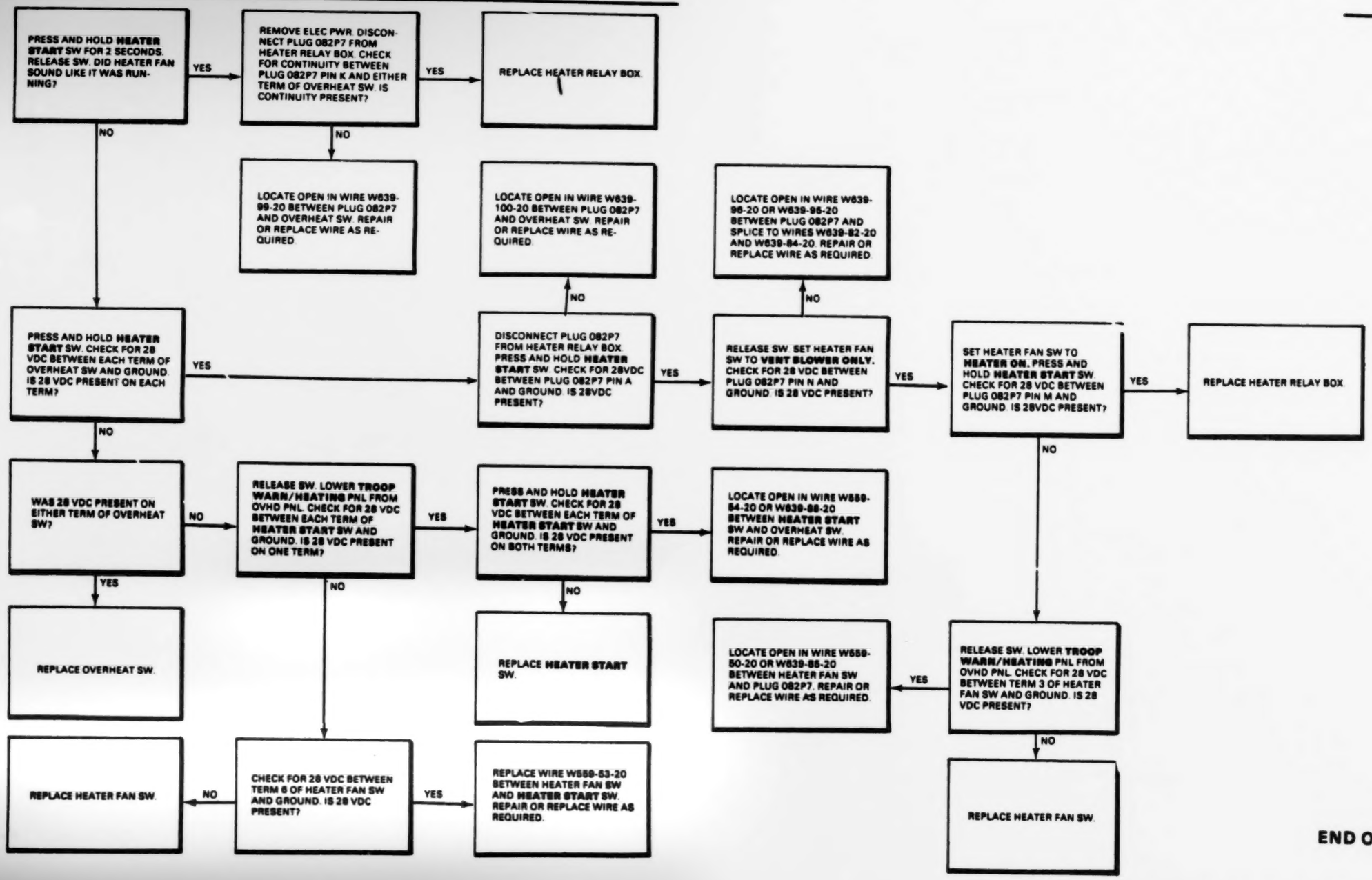
13-1.11 HEATER FAN CAN NOT BE HEARD RUNNING AFTER HEATER START SWITCH PRESSED AND RELEASED (Continued)


PRESS AND HOLD HEATER START SW FOR 2 SECONDS. RELEASE SW. DID HEATER FAN SOUND LIKE IT WAS RUNNING?
YES
REMOVE ELEC PWR. DISCONNECT PLUG 082P7 FROM HEATER RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 082P7 PIN K AND EITHER TERM OF OVERHEAT SW. IS CONTINUITY PRESENT?
YES
REPLACE HEATER RELAY BOX.
NO
LOCATE OPEN IN WIRE W639-99-20 BETWEEN PLUG 082P7 AND OVERHEAT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
PRESS AND HOLD HEATER START SW. CHECK FOR 28 VDC BETWEEN EACH TERM OF OVERHEAT SW AND GROUND. IS 28 VDC PRESENT ON EACH TERM?
YES
DISCONNECT PLUG 082P7 FROM HEATER RELAY BOX. PRESS AND HOLD HEATER START SW. CHECK FOR 28VDC BETWEEN PLUG 082P7 PIN A AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W639-100-20 BETWEEN PLUG 082P7 AND OVERHEAT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
RELEASE SW. SET HEATER FAN SW TO VENT BLOWER ONLY. CHECK FOR 28 VDC BETWEEN PLUG 082P7 PIN N AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W639-96-20 OR W639-95-20 BETWEEN PLUG 082P7 AND SPLICE TO WIRES W639-82-20 AND W639-84-20. REPAIR OR REPLACE WIRE AS REQUIRED
NO
SET HEATER FAN SW TO HEATER ON. PRESS AND HOLD HEATER START SW. CHECK FOR 28 VDC BETWEEN PLUG 082P7 PIN M AND GROUND. IS 28VDC PRESENT?
YES
REPLACE HEATER RELAY BOX.
NO
WAS 28 VDC PRESENT ON EITHER TERM OF OVERHEAT SW?
NO
RELEASE SW. LOWER TROOP WARN/HEATING PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN EACH TERM OF HEATER START SW AND GROUND. IS 28 VDC PRESENT ON ONE TERM?
YES
PRESS AND HOLD HEATER START SW. CHECK FOR 28 VDC BETWEEN EACH TERM OF HEATER START SW AND GROUND. IS 28 VDC PRESENT ON BOTH TERMS?
YES
LOCATE OPEN IN WIRE W659-54-20 OR W639-86-20 BETWEEN HEATER START SW AND OVERHEAT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE OVERHEAT SW.
NO
NO
REPLACE HEATER START SW.
LOCATE OPEN IN WIRE W659-50-20 OR W639-85-20 BETWEEN HEATER FAN SW AND PLUG 082P7. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
RELEASE SW. LOWER TROOP WARN/HEATING PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 3 OF HEATER FAN SW AND GROUND. IS 28 VDC PRESENT?
NO
REPLACE HEATER FAN SW.
REPLACE HEATER FAN SW.
NO
CHECK FOR 28 VDC BETWEEN TERM 6 OF HEATER FAN SW AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE WIRE W659-53-20 BETWEEN HEATER FAN SW AND HEATER START SW. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

13-1.12 HEATER DOES NOT PROVIDE WARM AIR

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

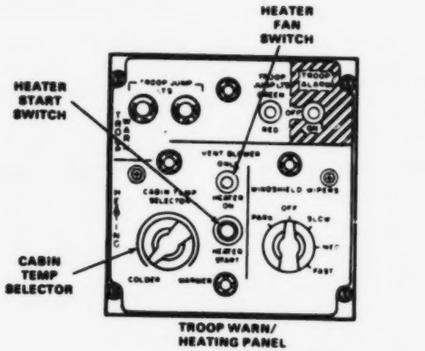
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter
Stopwatch

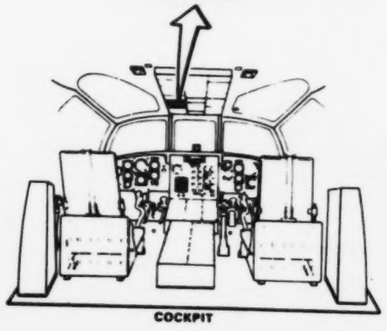
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed





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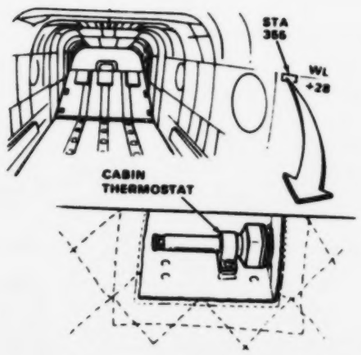

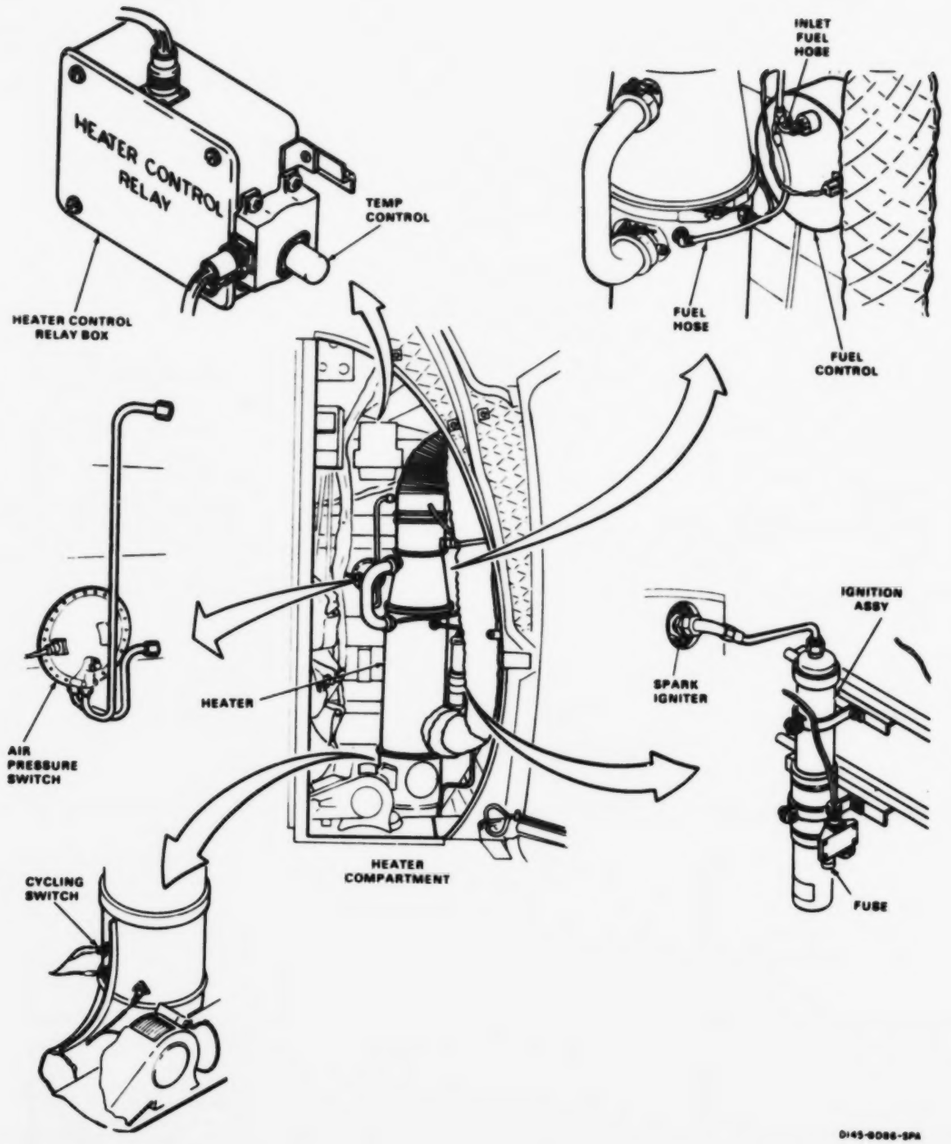

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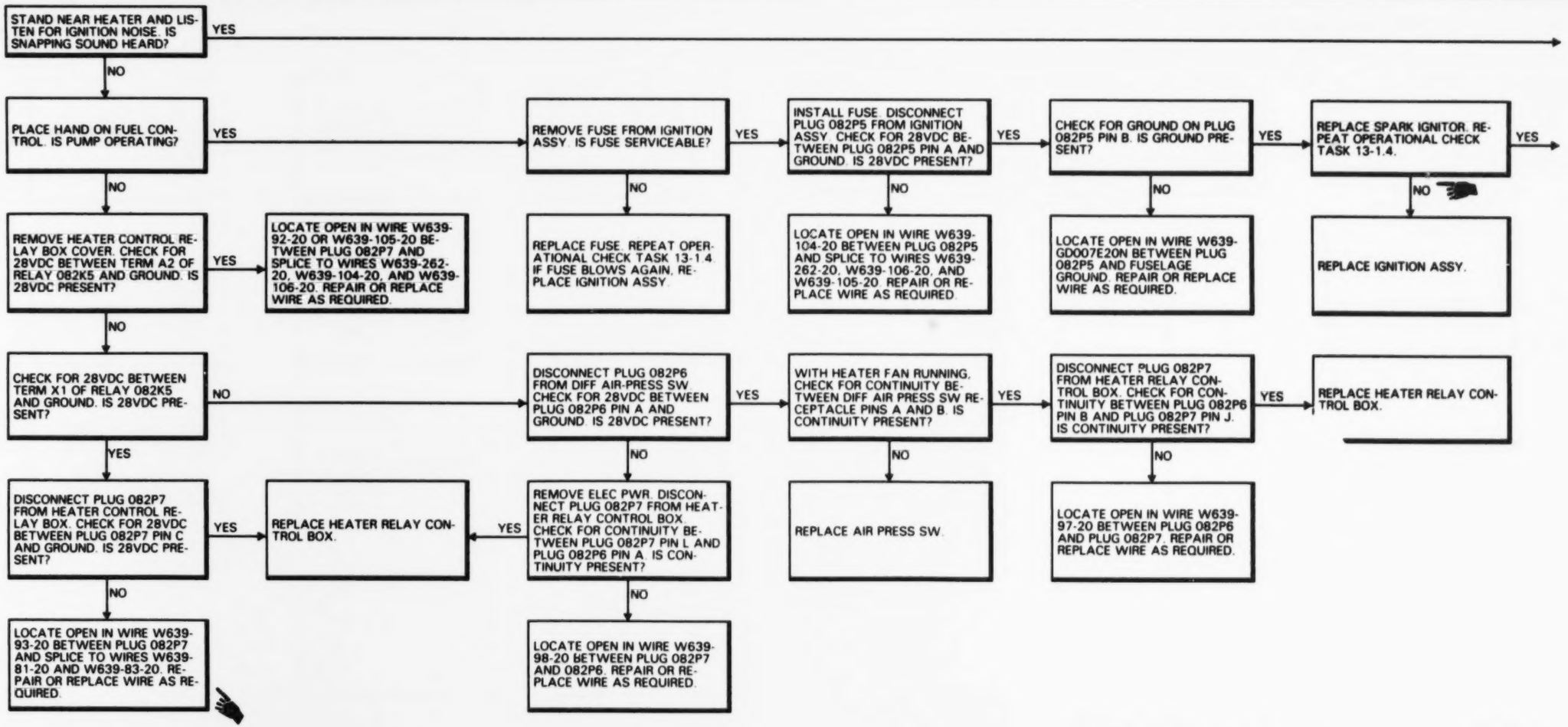
13-1.12 HEATER DOES NOT PROVIDE WARM AIR (Continued)


STAND NEAR HEATER AND LISTEN FOR IGNITION NOISE. IS SNAPPING SOUND HEARD?
YES
NO
PLACE HAND ON FUEL CONTROL. IS PUMP OPERATING?
YES
NO
REMOVE FUSE FROM IGNITION ASSY. IS FUSE SERVICEABLE?
YES
NO
REPLACE FUSE. REPEAT OPERATIONAL CHECK TASK 13-1.4 IF FUSE BLOWS AGAIN, REPLACE IGNITION ASSY.
INSTALL FUSE. DISCONNECT PLUG 082P5 FROM IGNITION ASSY. CHECK FOR 28VDC BETWEEN PLUG 082P5 PIN A AND GROUND. IS 28VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-104-20 BETWEEN PLUG 082P5 AND SPLICE TO WIRES W639-262-20, W639-106-20, AND W639-105-20. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 082P5 PIN B. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-GD007E20N BETWEEN PLUG 082P5 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE SPARK IGNITOR. REPEAT OPERATIONAL CHECK TASK 13-1.4.
YES
NO
REPLACE IGNITION ASSY.
REMOVE HEATER CONTROL RELAY BOX COVER. CHECK FOR 28VDC BETWEEN TERM A2 OF RELAY 082K5 AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W639-92-20 OR W639-105-20 BETWEEN PLUG 082P7 AND SPLICE TO WIRES W639-262-20, W639-104-20, AND W639-106-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
CHECK FOR 28VDC BETWEEN TERM X1 OF RELAY 082K5 AND GROUND. IS 28VDC PRESENT?
NO
YES
DISCONNECT PLUG 082P6 FROM DIFF AIR-PRESS SW. CHECK FOR 28VDC BETWEEN PLUG 082P6 PIN A AND GROUND. IS 28VDC PRESENT?
YES
NO
REMOVE ELEC PWR. DISCONNECT PLUG 082P7 FROM HEATER RELAY CONTROL BOX. CHECK FOR CONTINUITY BETWEEN PLUG 082P7 PIN L AND PLUG 082P6 PIN A. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-98-20 BETWEEN PLUG 082P7 AND 082P6. REPAIR OR REPLACE WIRE AS REQUIRED.
WITH HEATER FAN RUNNING, CHECK FOR CONTINUITY BETWEEN DIFF AIR PRESS SW RECEPTACLE PINS A AND B. IS CONTINUITY PRESENT?
YES
NO
REPLACE AIR PRESS SW.
DISCONNECT PLUG 082P7 FROM HEATER RELAY CONTROL BOX. CHECK FOR CONTINUITY BETWEEN PLUG 082P6 PIN B AND PLUG 082P7 PIN J. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-97-20 BETWEEN PLUG 082P6 AND PLUG 082P7. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE HEATER RELAY CONTROL BOX.
DISCONNECT PLUG 082P7 FROM HEATER CONTROL RELAY BOX. CHECK FOR 28VDC BETWEEN PLUG 082P7 PIN C AND GROUND. IS 28VDC PRESENT?
YES
NO
REPLACE HEATER RELAY CONTROL BOX.
LOCATE OPEN IN WIRE W639-93-20 BETWEEN PLUG 082P7 AND SPLICE TO WIRES W639-81-20 AND W639-83-20. REPAIR OR REPLACE WIRE AS REQUIRED.

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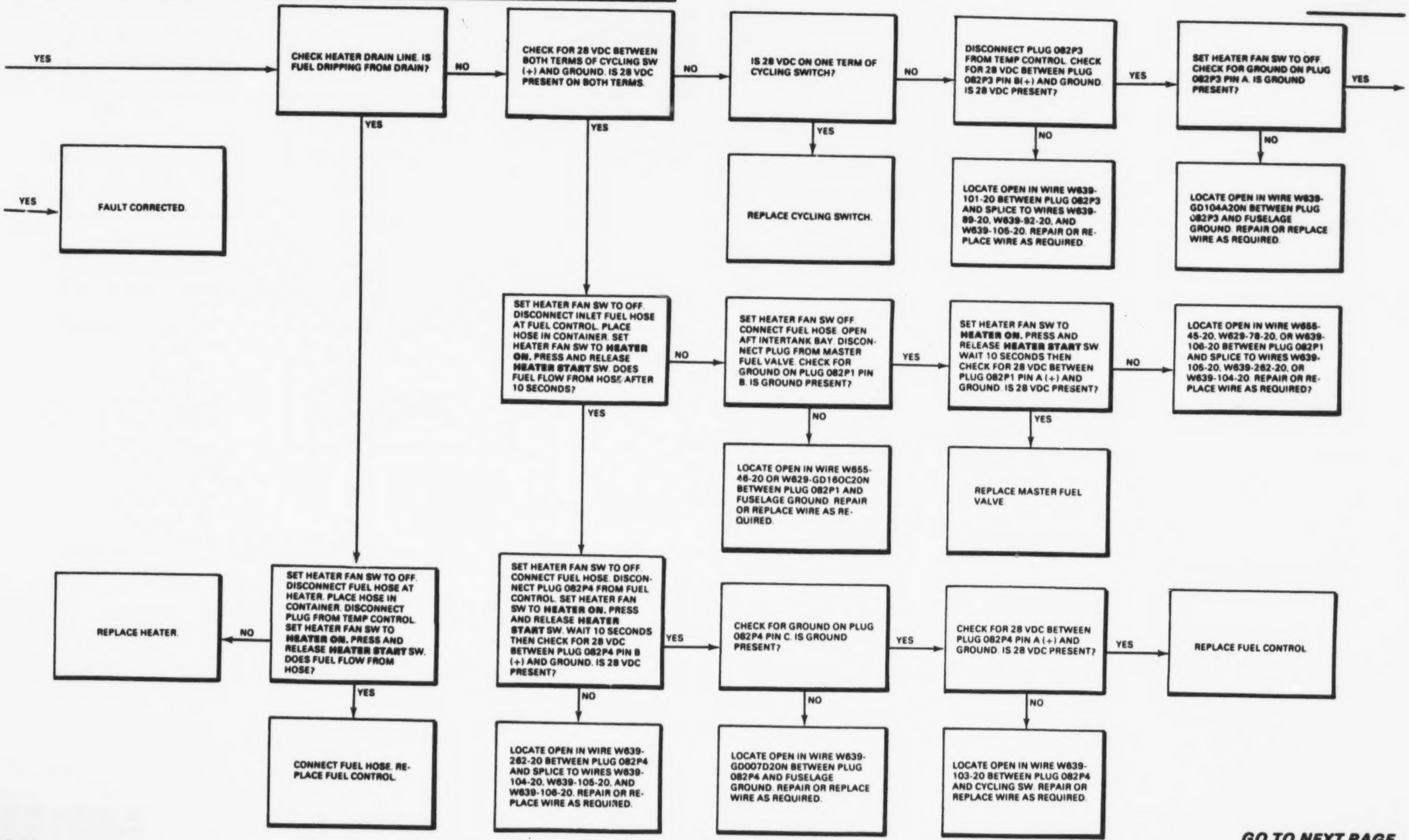
13-1.12 HEATER DOES NOT PROVIDE WARM AIR (Continued)


YES
CHECK HEATER DRAIN LINE. IS FUEL DRIPPING FROM DRAIN?
NO
CHECK FOR 28 VDC BETWEEN BOTH TERMS OF CYCLING SW (+) AND GROUND. IS 28 VDC PRESENT ON BOTH TERMS.
NO
IS 28 VDC ON ONE TERM OF CYCLING SWITCH?
NO
DISCONNECT PLUG 082P3 FROM TEMP CONTROL. CHECK FOR 28 VDC BETWEEN PLUG 082P3 PIN B(+) AND GROUND. IS 28 VDC PRESENT?
YES
SET HEATER FAN SW TO OFF. CHECK FOR GROUND ON PLUG 082P3 PIN A. IS GROUND PRESENT?
YES
YES
FAULT CORRECTED.
YES
REPLACE CYCLING SWITCH.
NO
LOCATE OPEN IN WIRE W639-101-20 BETWEEN PLUG 082P3 AND SPLICE TO WIRES W639-89-20, W639-92-20, AND W639-106-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W639-GD104A20N BETWEEN PLUG 082P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
SET HEATER FAN SW TO OFF. DISCONNECT INLET FUEL HOSE AT FUEL CONTROL. PLACE HOSE IN CONTAINER. SET HEATER FAN SW TO HEATER ON. PRESS AND RELEASE HEATER START SW. DOES FUEL FLOW FROM HOSE AFTER 10 SECONDS?
NO
SET HEATER FAN SW OFF. CONNECT FUEL HOSE. OPEN AFT INTERTANK BAY. DISCONNECT PLUG FROM MASTER FUEL VALVE. CHECK FOR GROUND ON PLUG 082P1 PIN B. IS GROUND PRESENT?
YES
SET HEATER FAN SW TO HEATER ON. PRESS AND RELEASE HEATER START SW. WAIT 10 SECONDS THEN CHECK FOR 28 VDC BETWEEN PLUG 082P1 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
NO
LOCATE OPEN IN WIRE W655-95-20, W629-78-20, OR W639-106-20 BETWEEN PLUG 082P1 AND SPLICE TO WIRES W639-105-20, W639-262-20, OR W639-104-20. REPAIR OR REPLACE WIRE AS REQUIRED?
YES
LOCATE OPEN IN WIRE W655-46-20 OR W629-GD160C20N BETWEEN PLUG 082P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE MASTER FUEL VALVE
REPLACE HEATER.
NO
SET HEATER FAN SW TO OFF. DISCONNECT FUEL HOSE AT HEATER. PLACE HOSE IN CONTAINER. DISCONNECT PLUG FROM TEMP CONTROL. SET HEATER FAN SW TO HEATER ON. PRESS AND RELEASE HEATER START SW. DOES FUEL FLOW FROM HOSE?
YES
CONNECT FUEL HOSE. REPLACE FUEL CONTROL.
SET HEATER FAN SW TO OFF. CONNECT FUEL HOSE. DISCONNECT PLUG 082P4 FROM FUEL CONTROL. SET HEATER FAN SW TO HEATER ON. PRESS AND RELEASE HEATER START SW. WAIT 10 SECONDS THEN CHECK FOR 28 VDC BETWEEN PLUG 082P4 PIN B (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-262-20 BETWEEN PLUG 082P4 AND SPLICE TO WIRES W639-104-20, W639-105-20, AND W639-106-20. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 082P4 PIN C. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-GD007D20N BETWEEN PLUG 082P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR 28 VDC BETWEEN PLUG 082P4 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-103-20 BETWEEN PLUG 082P4 AND CYCLING SW. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE FUEL CONTROL

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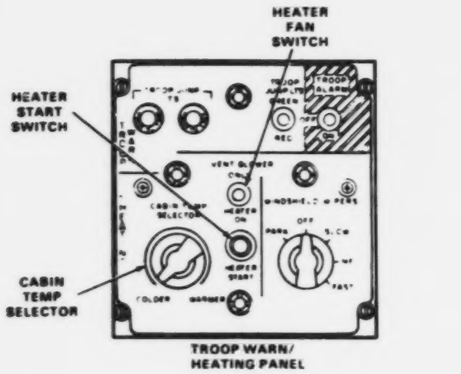
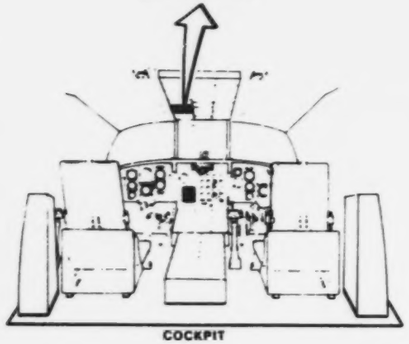
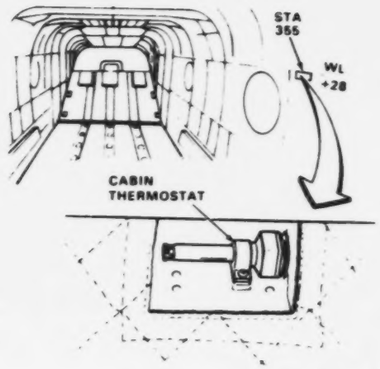
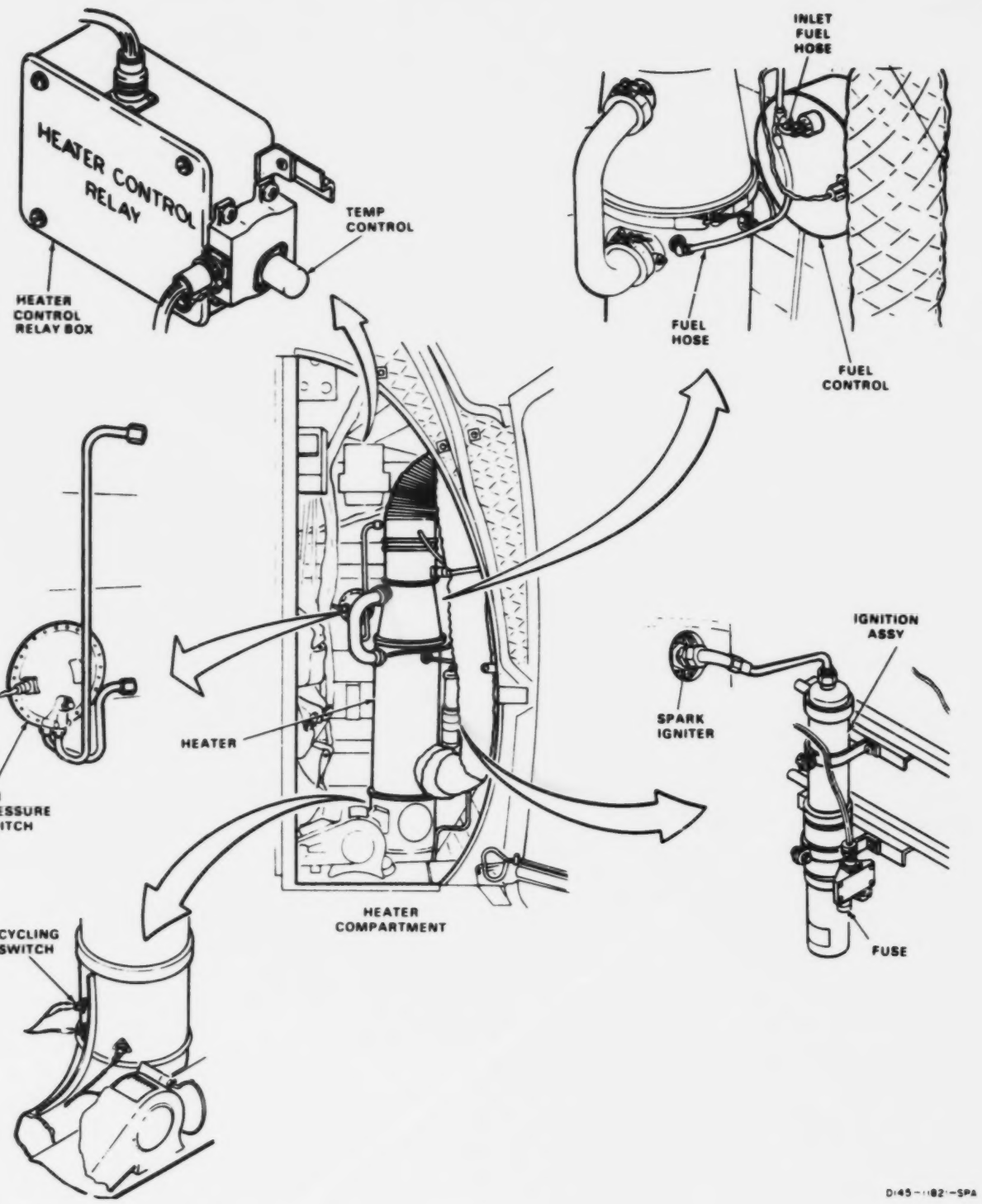
13-1.12 HEATER DOES NOT PROVIDE WARM AIR (Continued)









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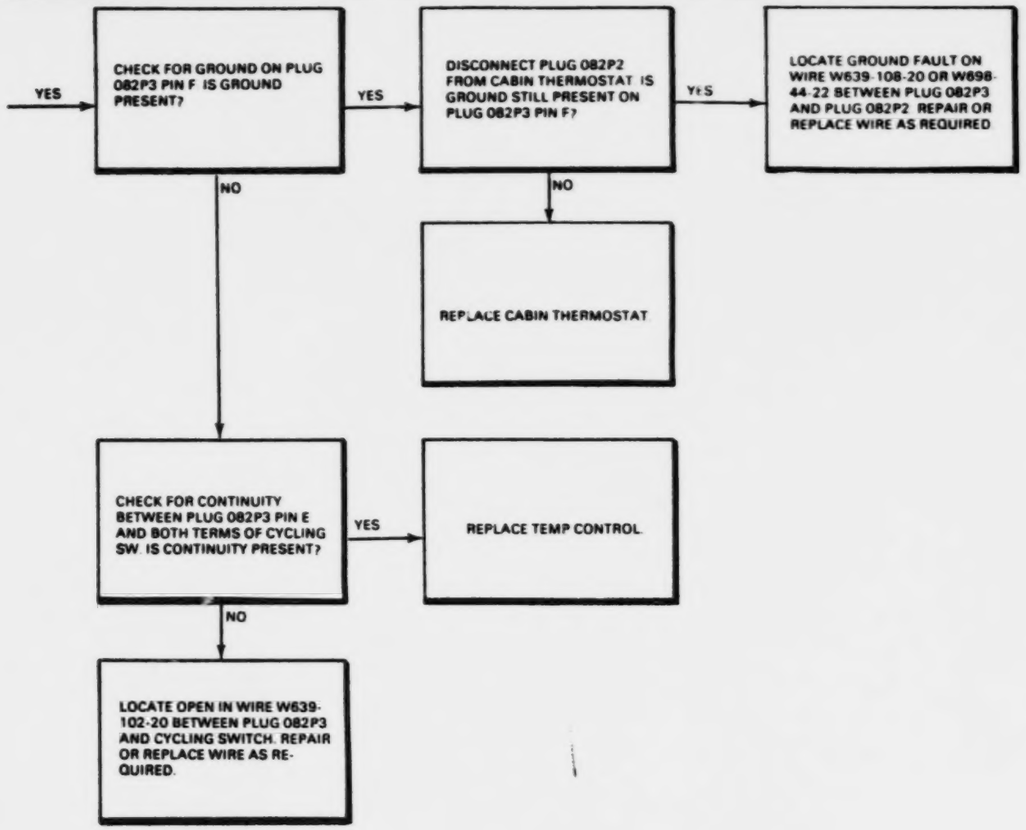
13-1.12 HEATER DOES NOT PROVIDE WARM AIR (Continued)


YES
CHECK FOR GROUND ON PLUG 082P3 PIN F IS GROUND PRESENT?
YES
DISCONNECT PLUG 082P2 FROM CABIN THERMOSTAT IS GROUND STILL PRESENT ON PLUG 082P3 PIN F?
YES
LOCATE GROUND FAULT ON WIRE W639-108-20 OR W698-44-22 BETWEEN PLUG 082P3 AND PLUG 082P2. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE CABIN THERMOSTAT
NO
CHECK FOR CONTINUITY BETWEEN PLUG 082P3 PIN E AND BOTH TERMS OF CYCLING SW. IS CONTINUITY PRESENT?
YES
REPLACE TEMP CONTROL
NO
LOCATE OPEN IN WIRE W639-102-20 BETWEEN PLUG 082P3 AND CYCLING SWITCH. REPAIR OR REPLACE WIRE AS REQUIRED.

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13-1.12 HEATER DOES NOT PROVIDE WARM AIR (Continued)

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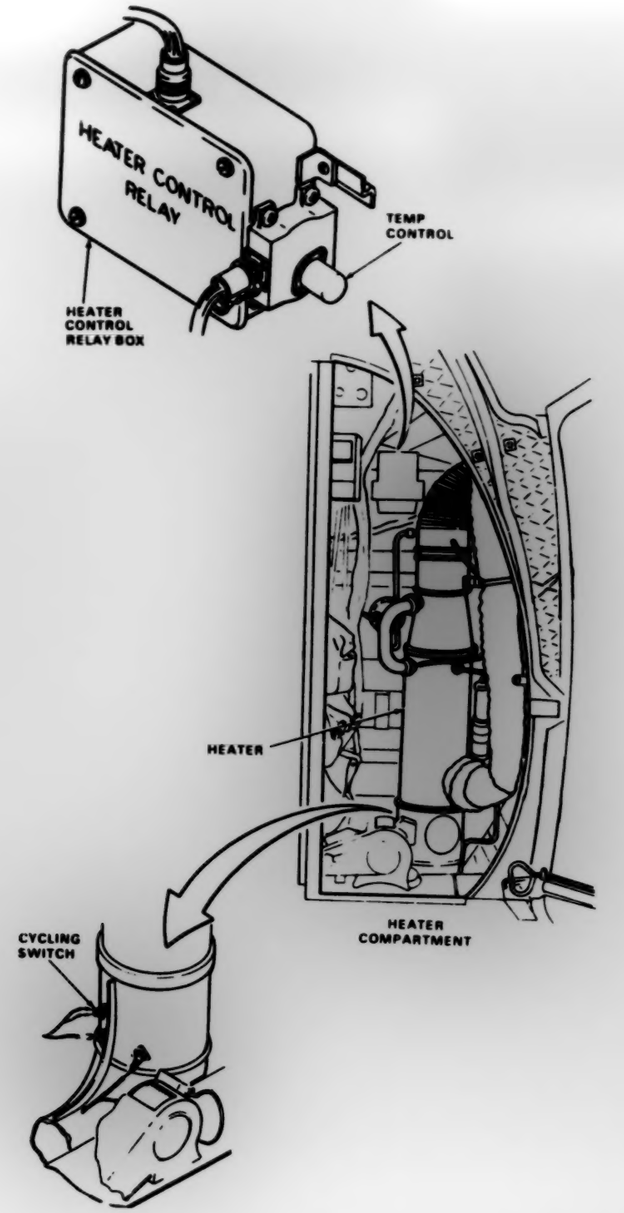

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END OF TASK

13-1.13 HEATER HOT LIGHT COMES ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

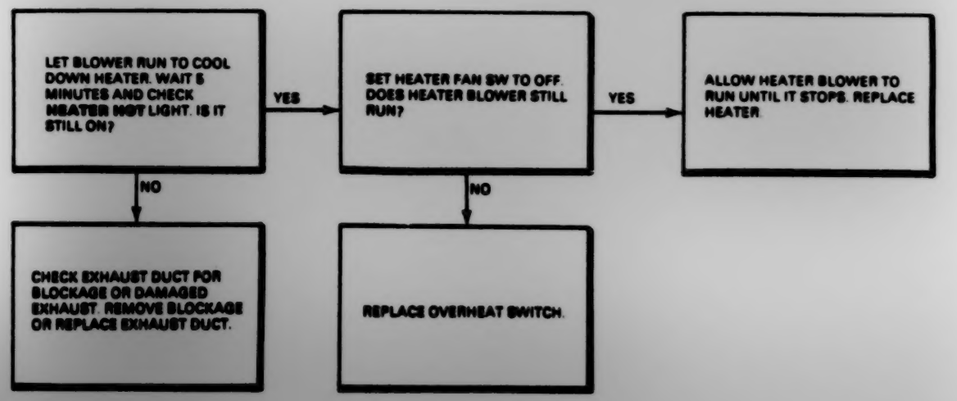
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

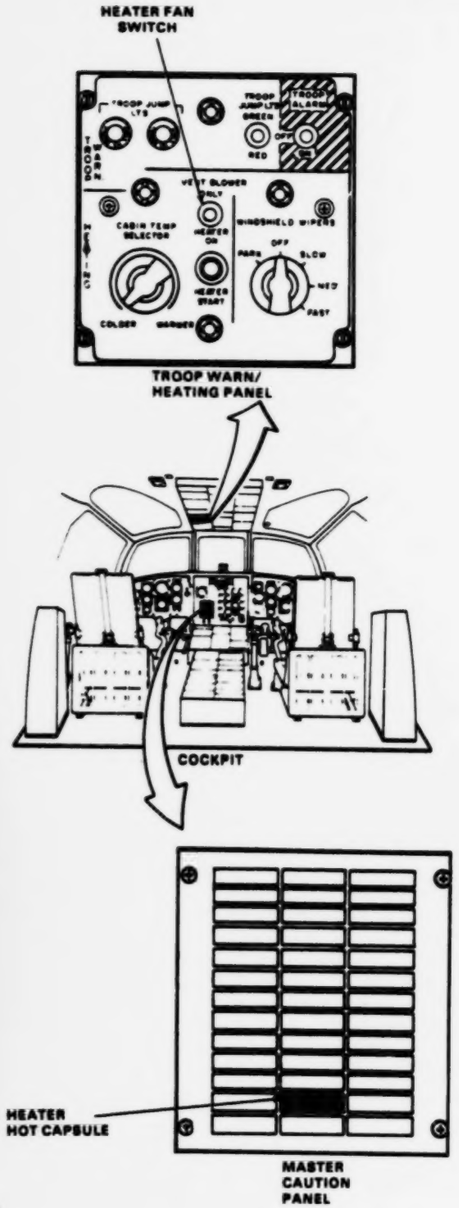
Materials:
None

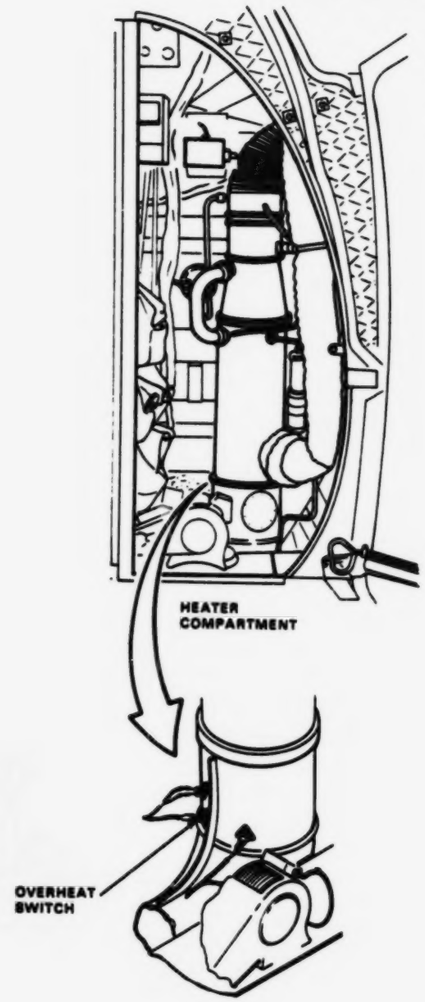
Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed


LET BLOWER RUN TO COOL DOWN HEATER. WAIT 5 MINUTES AND CHECK HEATER HOT LIGHT. IS IT STILL ON?
YES
SET HEATER FAN SW TO OFF. DOES HEATER BLOWER STILL RUN?
YES
ALLOW HEATER BLOWER TO RUN UNTIL IT STOPS. REPLACE HEATER.
NO
CHECK EXHAUST DUCT FOR BLOCKAGE OR DAMAGED EXHAUST. REMOVE BLOCKAGE OR REPLACE EXHAUST DUCT.
NO
REPLACE OVERHEAT SWITCH.





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END OF TASK

13-1.14 SYSTEM DOES NOT RESPOND TO CHANGES IN CABIN TEMP SELECTOR SETTING

FAULT ISOLATION PROCEDURE

INITIAL SETUP

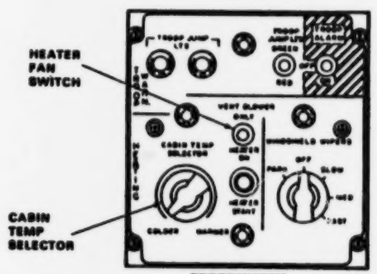
Applicable Configurations:
All

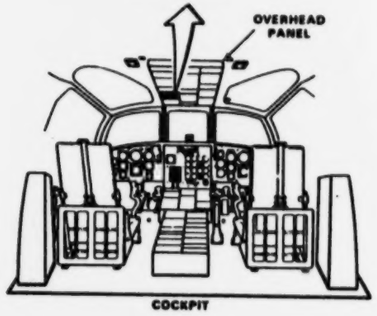
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

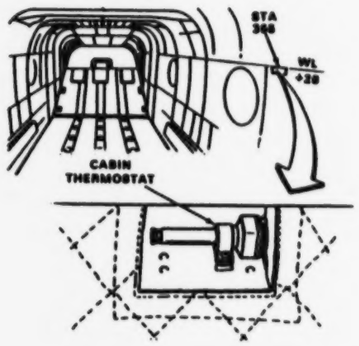
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

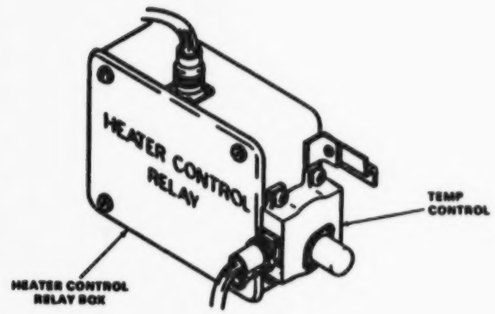
References:
TM 55-1520-240-23

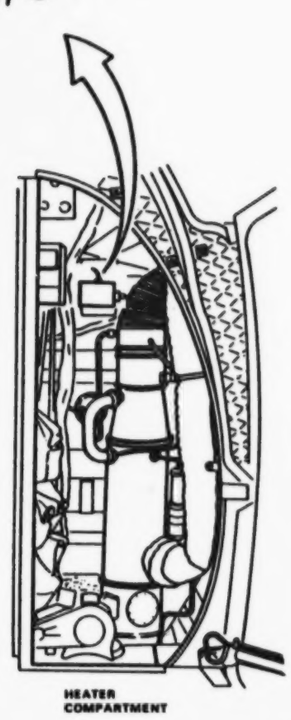
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed











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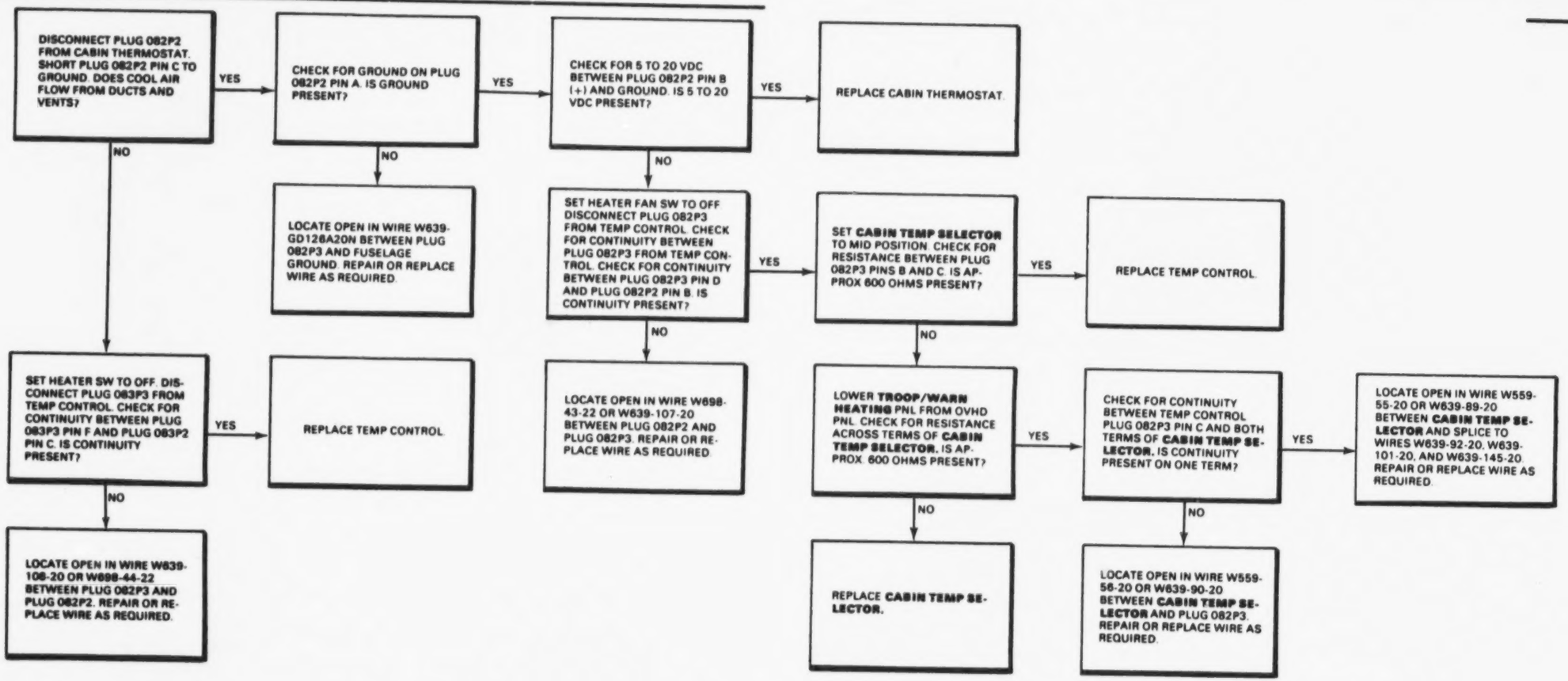
13-1.14 SYSTEM DOES NOT RESPOND TO CHANGES IN CABIN TEMP SELECTOR SETTING (Continued)


DISCONNECT PLUG 082P2 FROM CABIN THERMOSTAT. SHORT PLUG 082P2 PIN C TO GROUND. DOES COOL AIR FLOW FROM DUCTS AND VENTS?
YES
CHECK FOR GROUND ON PLUG 082P2 PIN A. IS GROUND PRESENT?
YES
CHECK FOR 5 TO 20 VDC BETWEEN PLUG 082P2 PIN B (+) AND GROUND. IS 5 TO 20 VDC PRESENT?
YES
REPLACE CABIN THERMOSTAT.
NO
LOCATE OPEN IN WIRE W639-GD128A20N BETWEEN PLUG 082P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
SET HEATER FAN SW TO OFF. DISCONNECT PLUG 082P3 FROM TEMP CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 082P3 FROM TEMP CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 082P3 PIN D AND PLUG 082P2 PIN B. IS CONTINUITY PRESENT?
YES
SET CABIN TEMP SELECTOR TO MID POSITION. CHECK FOR RESISTANCE BETWEEN PLUG 082P3 PINS B AND C. IS APPROX 600 OHMS PRESENT?
YES
REPLACE TEMP CONTROL.
NO
LOCATE OPEN IN WIRE W698-43-22 OR W639-107-20 BETWEEN PLUG 082P2 AND PLUG 082P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER TROOP/WARN HEATING PNL FROM OVHD PNL. CHECK FOR RESISTANCE ACROSS TERMS OF CABIN TEMP SELECTOR. IS APPROX 600 OHMS PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN TEMP CONTROL PLUG 082P3 PIN C AND BOTH TERMS OF CABIN TEMP SELECTOR. IS CONTINUITY PRESENT ON ONE TERM?
YES
LOCATE OPEN IN WIRE W559-55-20 OR W639-89-20 BETWEEN CABIN TEMP SELECTOR AND SPLICE TO WIRES W639-92-20, W639-101-20, AND W639-145-20. REPAIR OR REPLACE WIRE AS REQUIRED.
SET HEATER SW TO OFF. DISCONNECT PLUG 083P3 FROM TEMP CONTROL. CHECK FOR CONTINUITY BETWEEN PLUG 083P3 PIN F AND PLUG 083P2 PIN C. IS CONTINUITY PRESENT?
YES
REPLACE TEMP CONTROL.
NO
LOCATE OPEN IN WIRE W639-108-20 OR W698-44-22 BETWEEN PLUG 082P3 AND PLUG 082P2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CABIN TEMP SELECTOR.
NO
LOCATE OPEN IN WIRE W559-58-20 OR W639-90-20 BETWEEN CABIN TEMP SELECTOR AND PLUG 082P3. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

13-1.15 HEATER FAN STOPS RUNNING IMMEDIATELY AFTER HEATER FAN SWITCH SET TO OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

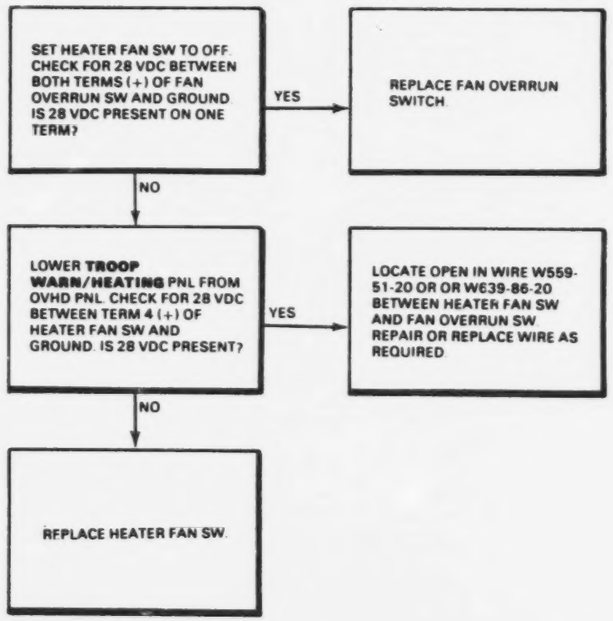
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

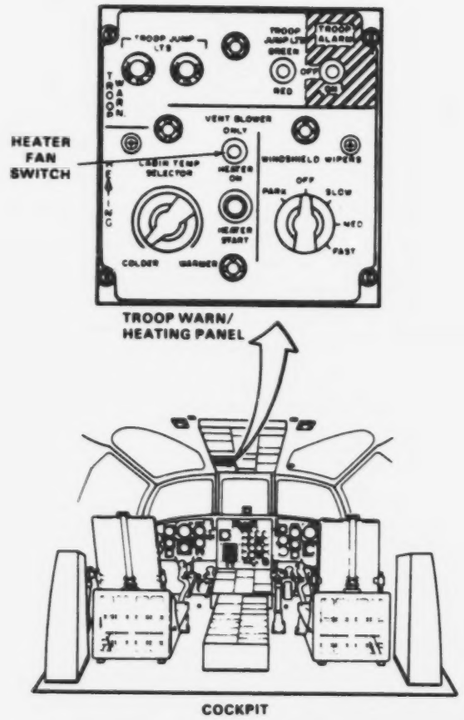
Materials:
None

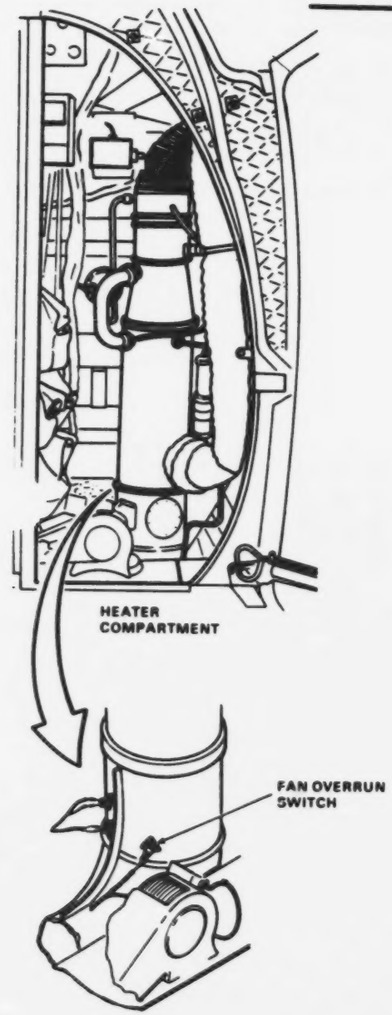
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed


SET HEATER FAN SW TO OFF CHECK FOR 28 VDC BETWEEN BOTH TERMS (+) OF FAN OVERRUN SW AND GROUND IS 28 VDC PRESENT ON ONE TERM?
YES
REPLACE FAN OVERRUN SWITCH
NO
LOWER TROOP WARN/HEATING PNL FROM OVHD PNL. CHECK FOR 28 VDC BETWEEN TERM 4 (+) OF HEATER FAN SW AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-51-20 OR OR W639-86-20 BETWEEN HEATER FAN SW AND FAN OVERRUN SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HEATER FAN SW.





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END OF TASK

CHAPTER 14

HOIST AND WINCH TROUBLESHOOTING

CHAPTER 14
HOIST AND WINCH TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 14 contains procedures for Hoist and Winch System troubleshooting. Hoist and winch system failure symptoms are listed below. Included in this Chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for Hoist and Winch System.

Refer to TM 55-1520-240-23 for required Hoist and Winch maintenance procedures.

SYSTEM	PARA
CARGO/RESCUE WINCH SYSTEM	14-1

FAILURE SYMPTOM LIST

HOIST AND WINCH

SYMPTOM	TASK
CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL	14-1.4
CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED BY WINCH GRIP AT STA 95 AUXILIARY PANEL	14-1.4
CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED BY WINCH GRIP AT STA 502 RECEPTACLE	14-1.4
CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL	14-1.4
CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH CONTROL GRIP AT STA 95 AUXILIARY PANEL	14-1.4

HOIST AND WINCH

SYMPTOM	TASK
CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH GRIP AT HOIST OPERATORS STATION	14-1.4
HOIST CABLE CUTTER CIRCUIT BREAKER DOES NOT STAY CLOSED	14-1.4
HOIST CONT CIRCUIT BREAKER DOES NOT STAY CLOSED	14-1.4
28 VDC NOT MEASURED AT STA 340 CABLE CUTTER RECEPTACLE WHEN HOIST/CARGO HOOK PANEL CABLE CUTTER SWITCH IS SET TO ON	14-1.4
28 VDC NOT MEASURED AT STA 340 CABLE CUTTER RECEPTACLE WHEN WINCH GRIP CABLE CUTTER SWITCH PRESSED AT HOIST OPERATOR OR AUXILIARY PANEL	14-1.4

HOIST SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD034		150	FWD AND ABOVE OVHD PNL	61	40	10L
GD194		151	HEATER COMPARTMENT	120	40	18R
TB 17			WALKWAY — UNDERFLOOR	105	-30	18R
TB 27			RH CABIN	330	50	50R
TB 36			OVERHEAD PANEL — COCKPIT	80	40	12R
TB 37			OVERHEAD PANEL — COCKPIT	80	40	12L
132P1	MS3476W10-6S	15	HOIST WINCH MOTOR	120	-25	30R
132P2	M83723-95A1005N	30	HOIST CONTROL VALVE	120	25	18R
132P3	M83723-95A0803N	29	BRAKE REL SOL	120	35	18R
132P4	MS3456W10SL-3S	45	CABLE CUTTER, RECIP	340	50	0
132P5	MS3456W10S-2S	44	CABLE CUTTER SOL	340	50	0
132P6	MS3476W14-19P	21	HOIST, OPR PNL	340	50	50R
132P7	MS3476W14-19S	21	HOIST OPR CONT GRIP	340	50	50R
132J8	MS3450W10SL-3P	45	CABLE CUTTER STOW RECIP	95	-10	25R
132J9	MS3470W14-19S	21	MATES WITH 132P6	110	-10	25R
132J10	MS3450W10SL-3P	45	RECPT-CABLE CUTTER	340	50	0
132J11	MS3470W14-19S	21	132P6 AT HOIST OPR PNL	340	40	50R
132J12	MS3470W14-19S	21	132P6 AT AFT HOIST OPR	502	-20	50L
134P1	MS3476W14-19S	21	OVERHEAD PANEL — COCKPIT	80	40	10L

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
300J1	M83723-74A2041N	40	NO. 1 PDP			
300P1	M83723-75A2041N	40	NO. 1 PDP			
300J4	M83723-74A2461N	43	NO. 1 PDP			
300P4	M83723-75A2461N	43	NO. 1 PDP			
300J19	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J20	M83723-74A2461N	43	OVERHEAD PANEL — COCKPIT			
300P20	M83723-75A2461N	43	OVERHEAD PANEL — COCKPIT			
300J22	M83723-73A2041G	40	OVERHEAD PANEL — COCKPIT			
300P22	M83723-76A2041G	40	OVERHEAD PANEL — COCKPIT			
300J47	M83723-74A2461N	43	HEATER COMPARTMENT — OVHD	105	40	30R
300P47	M83723-75A2461N	43	HEATER COMPARTMENT — OVHD	105	40	30R
300J48	M83723-74A2461N	43	ELECTRONICS COMPARTMENT OVHD	120	40	20L
300P48	M83723-75A2461N	43	ELECTRONICS COMPARTMENT OVHD	120	40	20L
300J52	M83723-74A2255N	42	AFT CROWN	460	45	30L
300P52	M83723-75A2255N	42	AFT CROWN	460	45	30L

HOIST AND WINCH SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

15

PLUG

15

RECEPTACLE

30

PLUG

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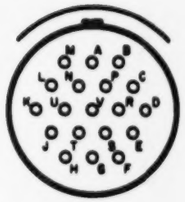

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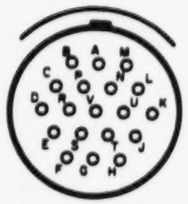

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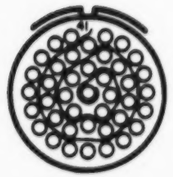

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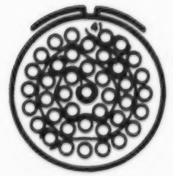

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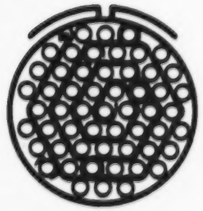

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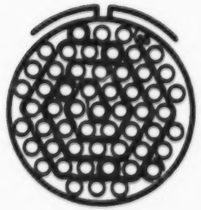

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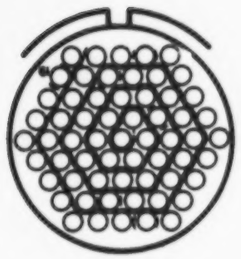
HOIST AND WINCH SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE



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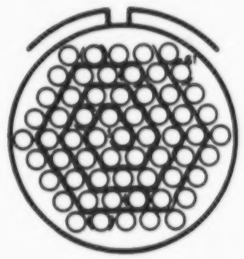
PLUG



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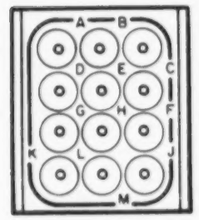
GND MODULE



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GND STUD

151

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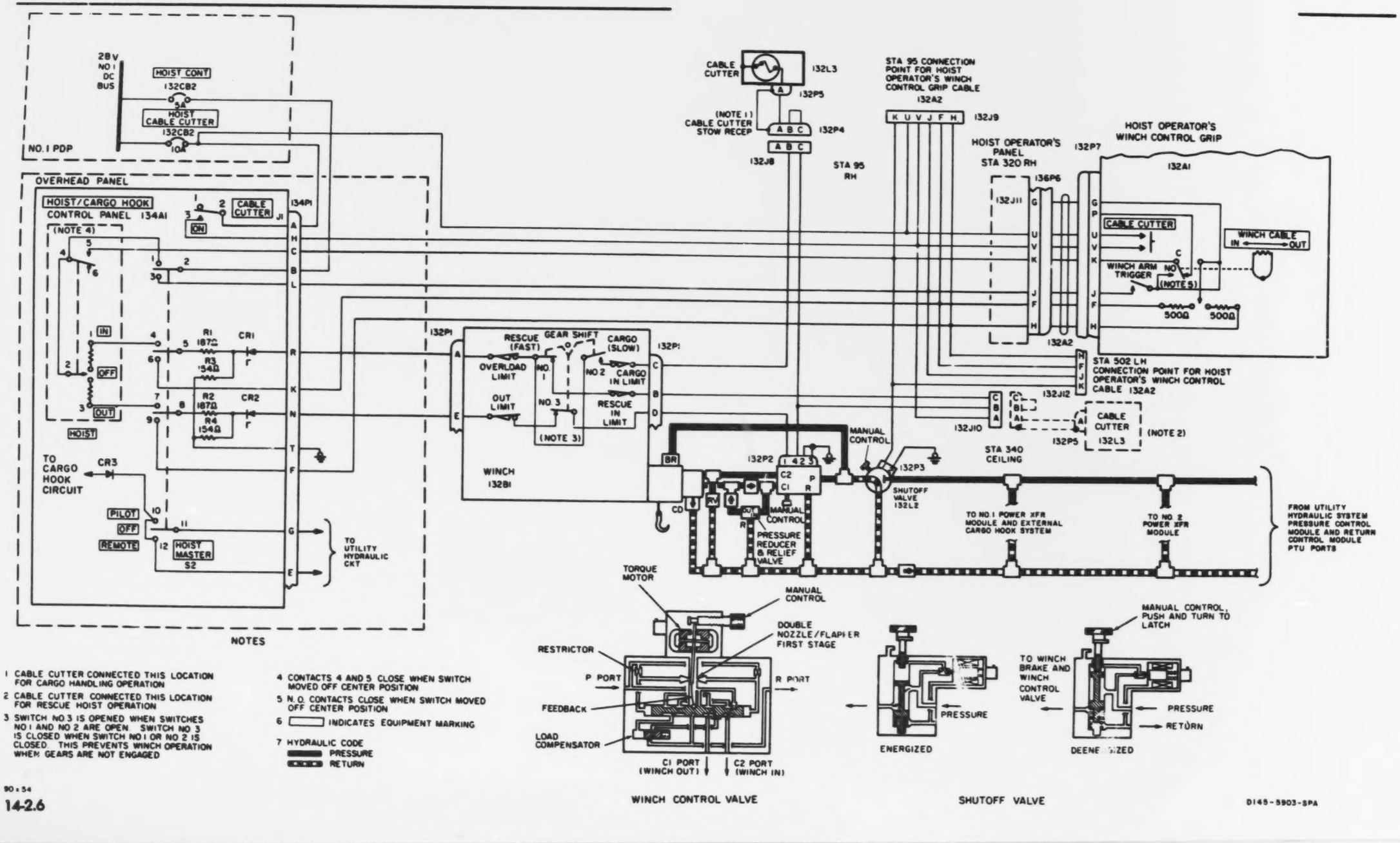
14-1 CARGO/RESCUE WINCH SYSTEM

14-1 CARGO/RESCUE WINCH SYSTEM

14-1.1 CARGO/RESCUE WINCH SYSTEM SCHEMATIC



NOTES

1 CABLE CUTTER CONNECTED THIS LOCATION FOR CARGO HANDLING OPERATION

2 CABLE CUTTER CONNECTED THIS LOCATION FOR RESCUE HOIST OPERATION

3 SWITCH NO 3 IS OPENED WHEN SWITCHES NO 1 AND NO 2 ARE OPEN. SWITCH NO 3 IS CLOSED WHEN SWITCH NO 1 OR NO 2 IS CLOSED. THIS PREVENTS WINCH OPERATION WHEN GEARS ARE NOT ENGAGED

4 CONTACTS 4 AND 5 CLOSE WHEN SWITCH MOVED OFF CENTER POSITION

5 N.O. CONTACTS CLOSE WHEN SWITCH MOVED OFF CENTER POSITION

6 ▭ INDICATES EQUIPMENT MARKING

7 HYDRAULIC CODE
PRESSURE
RETURN

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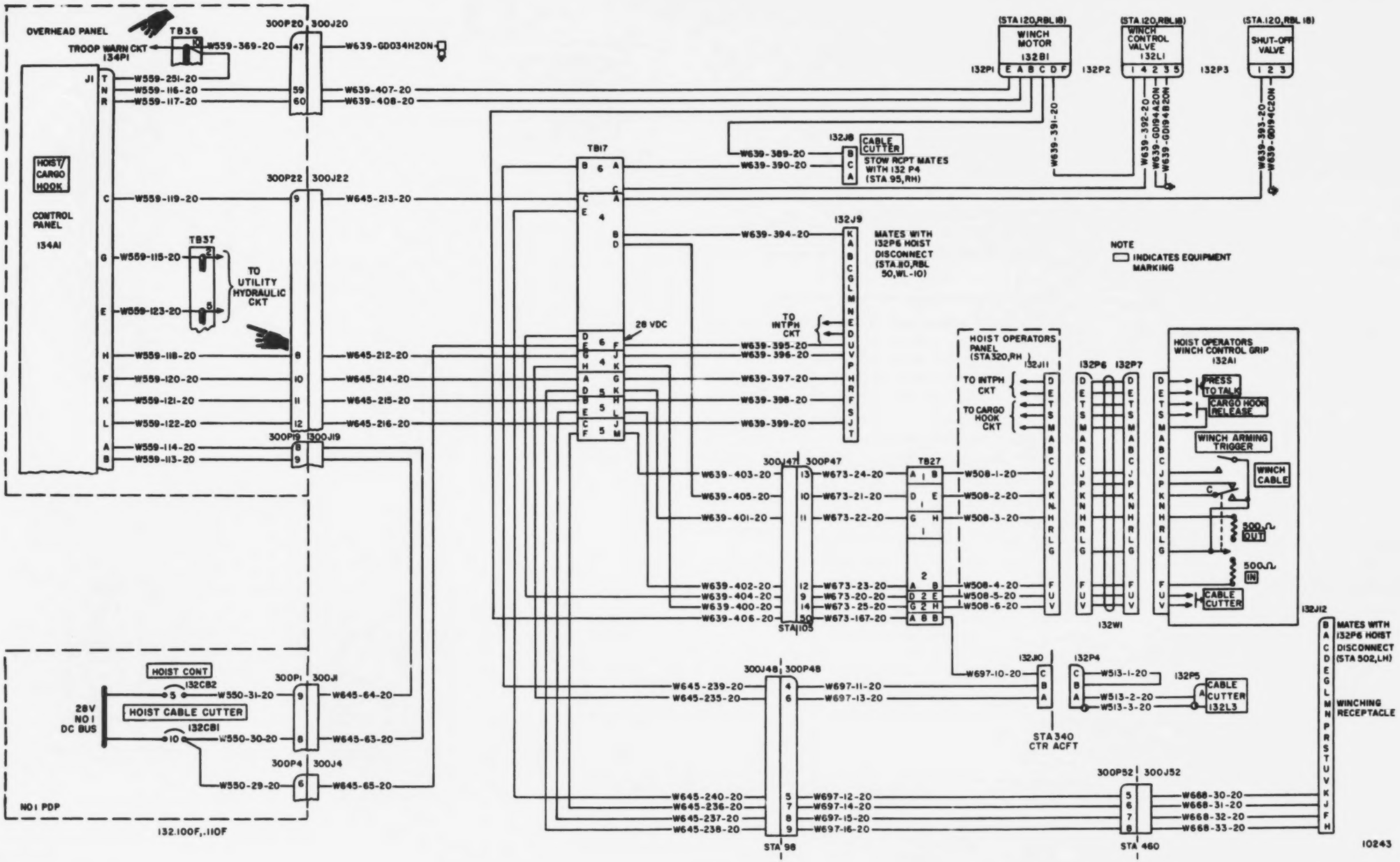
14-1.2 CARGO/RESCUE WINCH SYSTEM WIRING DIAGRAM



14-1.3 CARGO/RESCUE WINCH SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

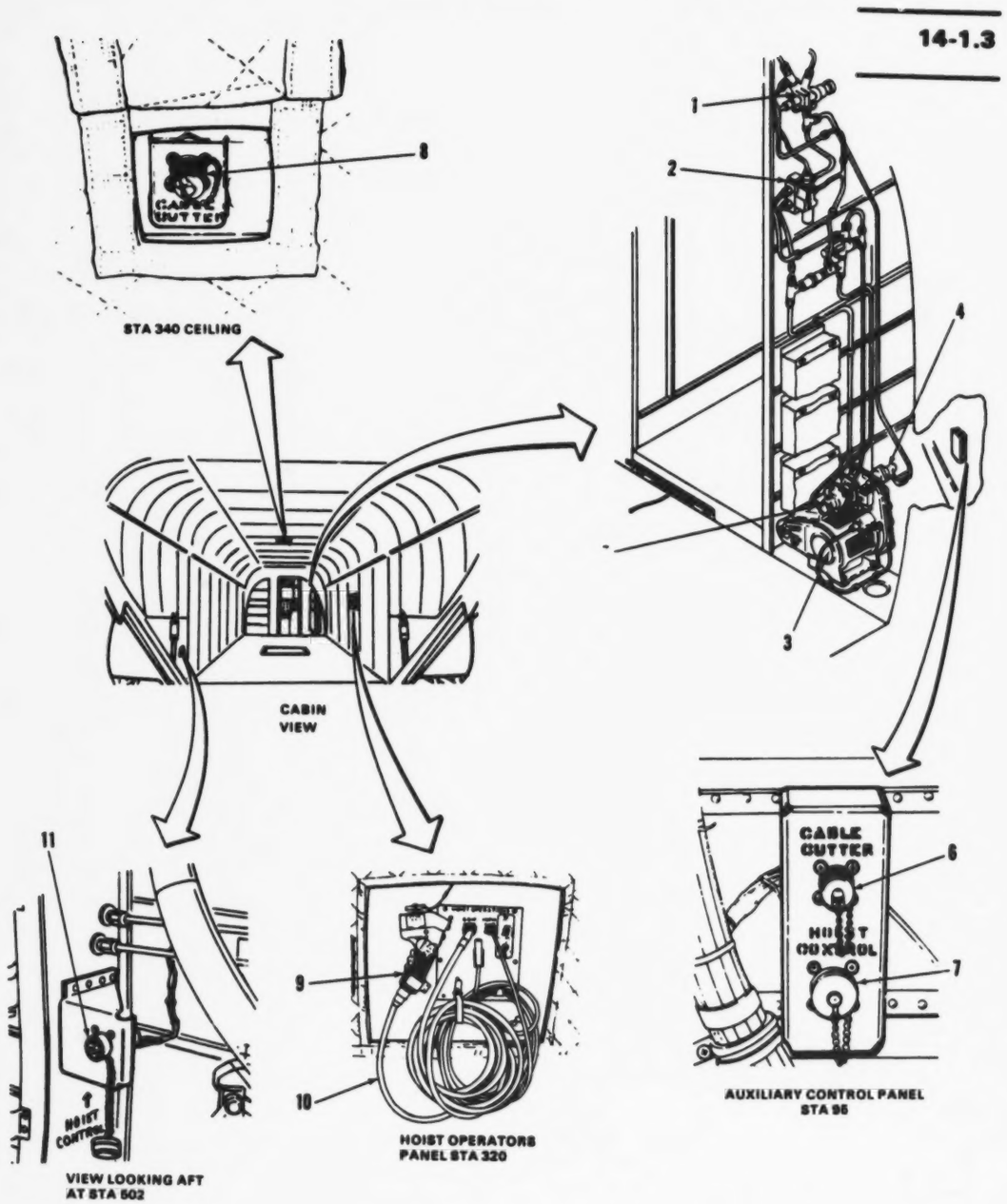
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed
Cable Cutter Inspected

TASK	RESULT
1. **Check shutoff valve (1).**	If valve (1) is loose or damaged, tighten or replace it as required. If hydraulic tubes to valve are loose or damaged, tighten or replace them as required. If electrical connector or wires to valve are damaged, repair or replace as required.
2. **Check winch control valve (2).**	If valve (2) is loose or damaged, tighten or replace it as required. If hydraulic tubes to valve are loose or damaged, tighten or replace them as required. If electrical connecter or wires to valve are damaged, repair or replace as required.
3. **Check hydraulic tubes and components between winch control valve (2) and winch (3).**	If any hydraulic tube or component is loose or damaged, repair or replace as required.
4. **Check winch (3).**	If winch (3) is loose or damaged, tighten or replace it. If brake (4) is loose or damaged, tighten or replace it as required. If winch motor (5) is loose or damaged, tighten or replace it as required. If connector or wires to winch are damaged repair or replace as required.



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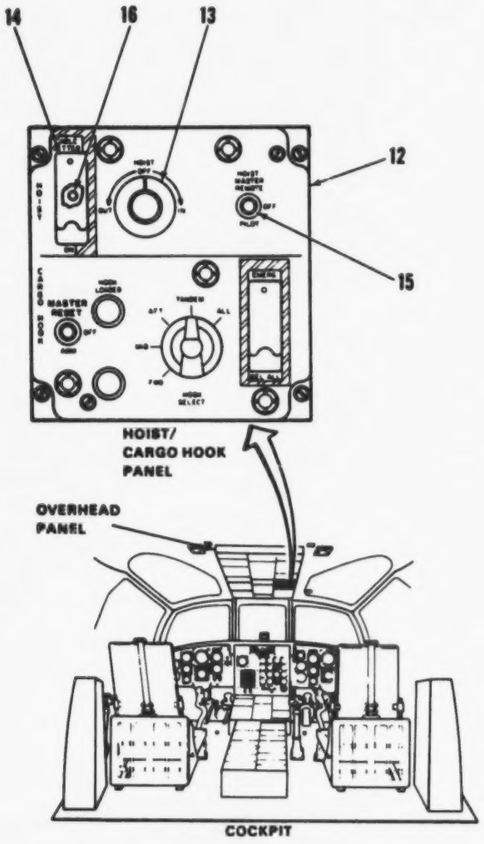
14-1.3 CARGO/RESCUE WINCH SYSTEM VISUAL CHECK (Continued)



TASK	RESULT
5. **Check CABLE CUTTER and HOIST CONTROL receptacles (6 and 7).**	If either receptacle or wiring to receptacle (6 or 7) is damaged, repair or replace as required.
6. **Pull down cover and check CABLE CUTTER receptacle (8).**	If receptacle (8) is damaged, replace it.
7. **Check winch operator's grip (9) and cable (10).**	If grip (9) is cracked or cable (10) is cut exposing wires, replace it.
8. **Check HOIST CONTROL receptacle (11).**	If receptacle (11) is damaged, replace it. If receptacle dust cover is damaged or missing, replace it.
9. **Check HOIST/CARGO HOOK panel (12).**	If knob (13) is loose or damaged, tighten or replace as required. If switchguard (14) is loose or damaged, tighten or replace as required. If switch (15 or 16) is loose or damaged, replace HOIST/CARGO HOOK panel (12).

FOLLOW-ON MAINTENANCE:

None

14-1.4 CARGO/RESCUE WINCH SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Multimeter
Asbestos Gloves (E187)
Stopwatch
Load, 600 pounds
Load, 3100-3300 pounds

Materials:
Lockwire (E228)

Personnel Required:
68F10 Aircraft Electrician
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

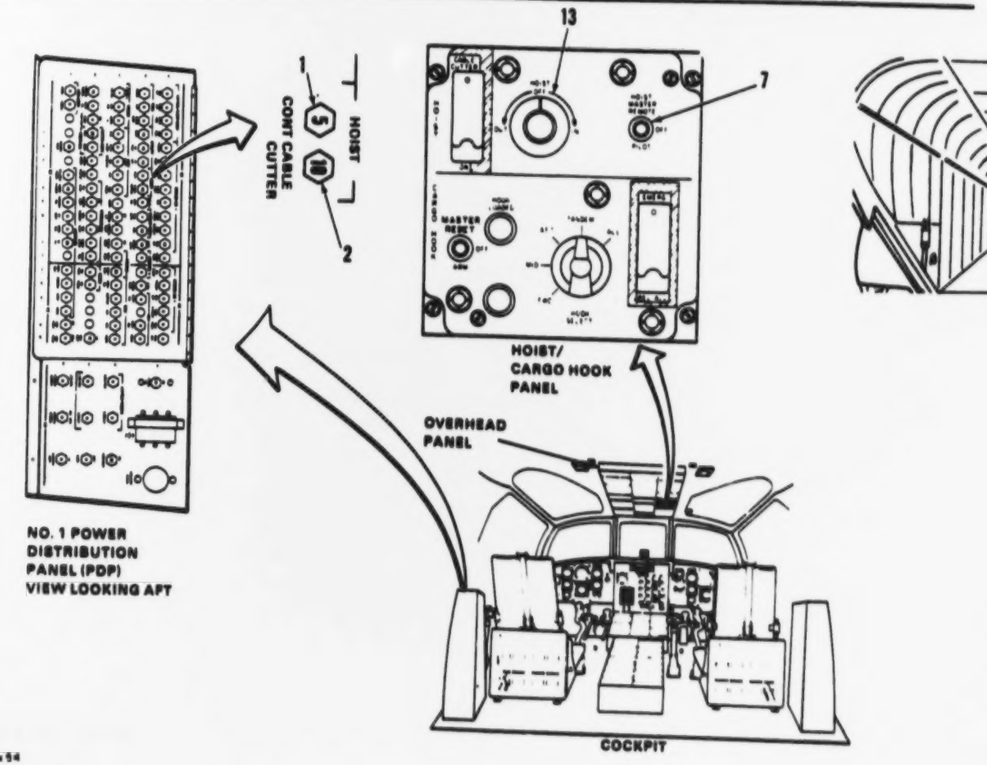
References:
TM 55-1520-240-23
TM 55-1520-240-10

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
Center Cargo Hook Removed
Visual Check of Cargo/Rescue Winch System Performed (Task 14-1.3)

General Safety Instructions:

WARNING

Wear gloves when handling wire rope (cable). Otherwise, injury to hands can result.



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14-1.4 CARGO/RESCUE WINCH SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
NOTE Keep tension on wire rope (cable) when reeling cable. Cable will reel evenly and will not snarl.	
1. **Check** that **HOIST CONT and HOIST CABLE CUTTER circuit breakers (1 and 2)** are closed.	If either circuit breaker (1 or 2) is open, close it. If HOIST CONT circuit breaker (1) opens again, go to task 14-1.5. If HOIST CABLE CUTTER circuit breaker (2) opens again, go to task 14-1.6.
2. **Check that winch shift lever (3) is set to RESCUE.**	If lever (3) not at RESCUE, set it to RESCUE. If lever can not be set to RESCUE, replace winch (4).
3. **Hold pressure line (5)** to shutoff valve (6). **Set HOIST MASTER switch (7) to PILOT.**	Pressure surge should be felt on pressure line (5). If not, go to task 7-2.4.
4. **Hold pressure line (8)** to brake on winch (4). **Push in and turn pushbutton (9) on shutoff valve (6). Release pushbutton.**	Pressure surge should be felt on pressure line (8). If not, replace shutoff valve (6). Push button (9) shall remain locked when released. If it comes out, replace shutoff valve (6).
5. Remove lockwire from knob (10) on winch control valve (11).	
6. Turn knob (10) in one direction. Reel out enough wire rope (cable) (12) to rig. Release knob. **Have helper keep slight drag on cable. Helper must wear gloves.**	Cable (12) shall reel off winch (4), if it does not, turn knob (10) in opposite direction. If cable still does not reel off winch, replace winch.
7. **Rig winch (4) for rescue mode (TM 55-1520-240-10).**	
8. **Turn and release pushbutton (9).**	Pushbutton (9) shall come out. If it does not, replace shutoff valve (6).
9. **Turn knob (10) in any direction. Release knob.**	Winch (4) shall not operate. If it does, replace shutoff valve (6).
10. **Turn HOIST control (13) to OUT. Release control to OFF when cable (12) stops reeling out.**	Winch (4) shall reel out cable (12) within 90 seconds and stop when 2-1/2 wraps of first layer of cable remain on winch drum. If winch does not reel out cable, go to task 14-1.7. If cable takes longer than 90 seconds to reel out, replace winch. If winch does not stop when 2-1/2 wraps remain on drum, adjust winch out-limit switch, TM 55-1520-240-23. If switch can not be adjusted, replace winch.
NOTE With cable reeled out, an inspection for broken strands or definite bends can be performed.	
CAUTION **Do not allow cable end to reel in and jam in a pulley. Damage to winch, pulley, or airframe can occur.**	
11. **Turn HOIST control (13) to IN. Release control to OFF when cable (12) stops reeling in. Have helper keep slight drag on cable. Helper must wear gloves.**	Winch (4) shall reel in cable (12) within 90 seconds and stop automatically when 26 to 26-1/2 feet of cable remain extended. Cable length is measured from sta 120 passageway bulkhead to cable ball end. If winch does not reel in cable, go to task 14-1.8. If cable takes longer than 90 seconds to reel in, or cable binds or spools unevenly, replace winch. If winch stops too soon or too late, (26 - 26-1/2 feet of cable not reeled), adjust rescue in-limit switch, TM 55-1520-240-23. If switch can not be adjusted, replace winch.

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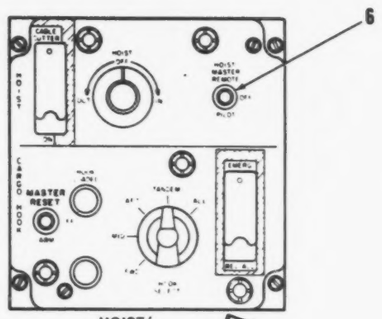
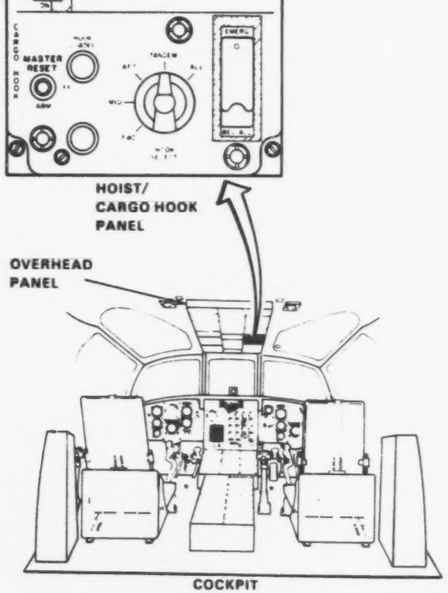
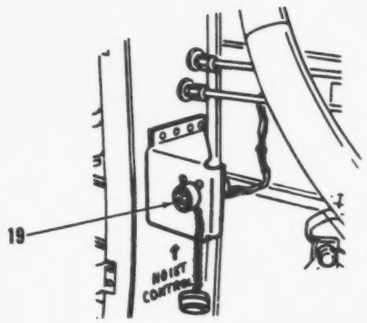
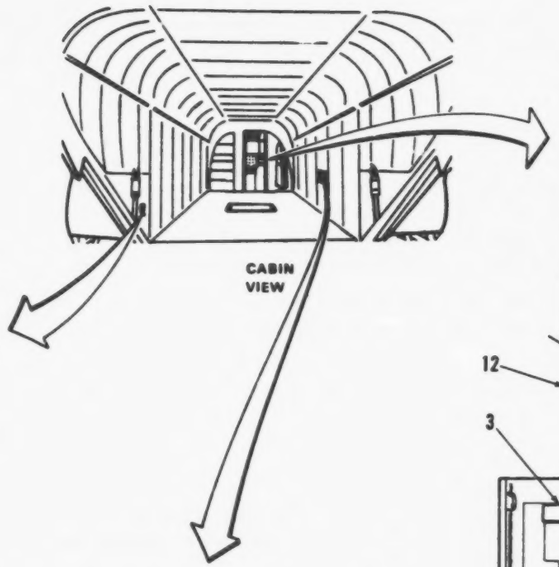
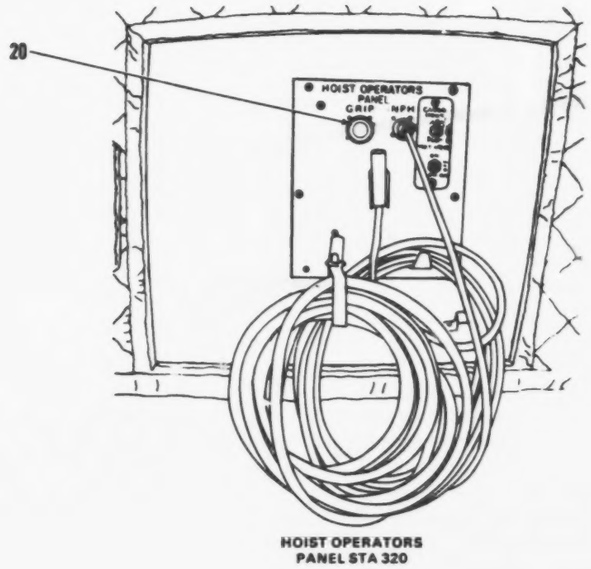
14-1.4 CARGO/RESCUE WINCH SYSTEM OPERATIONAL CHECK (Continued)

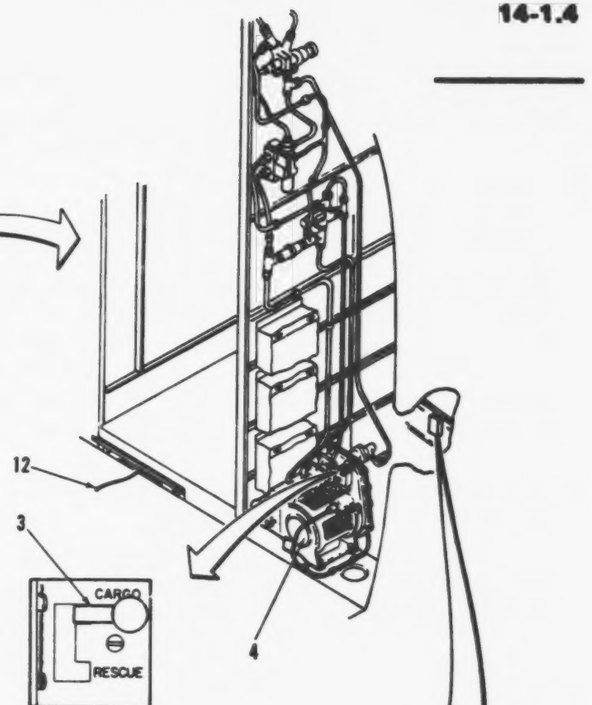


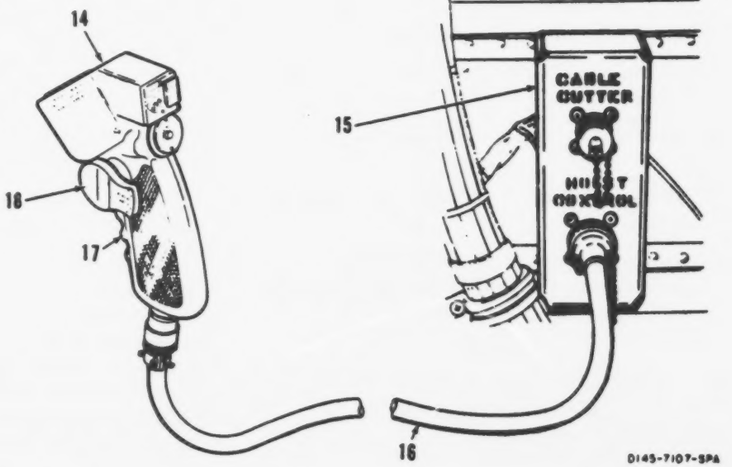












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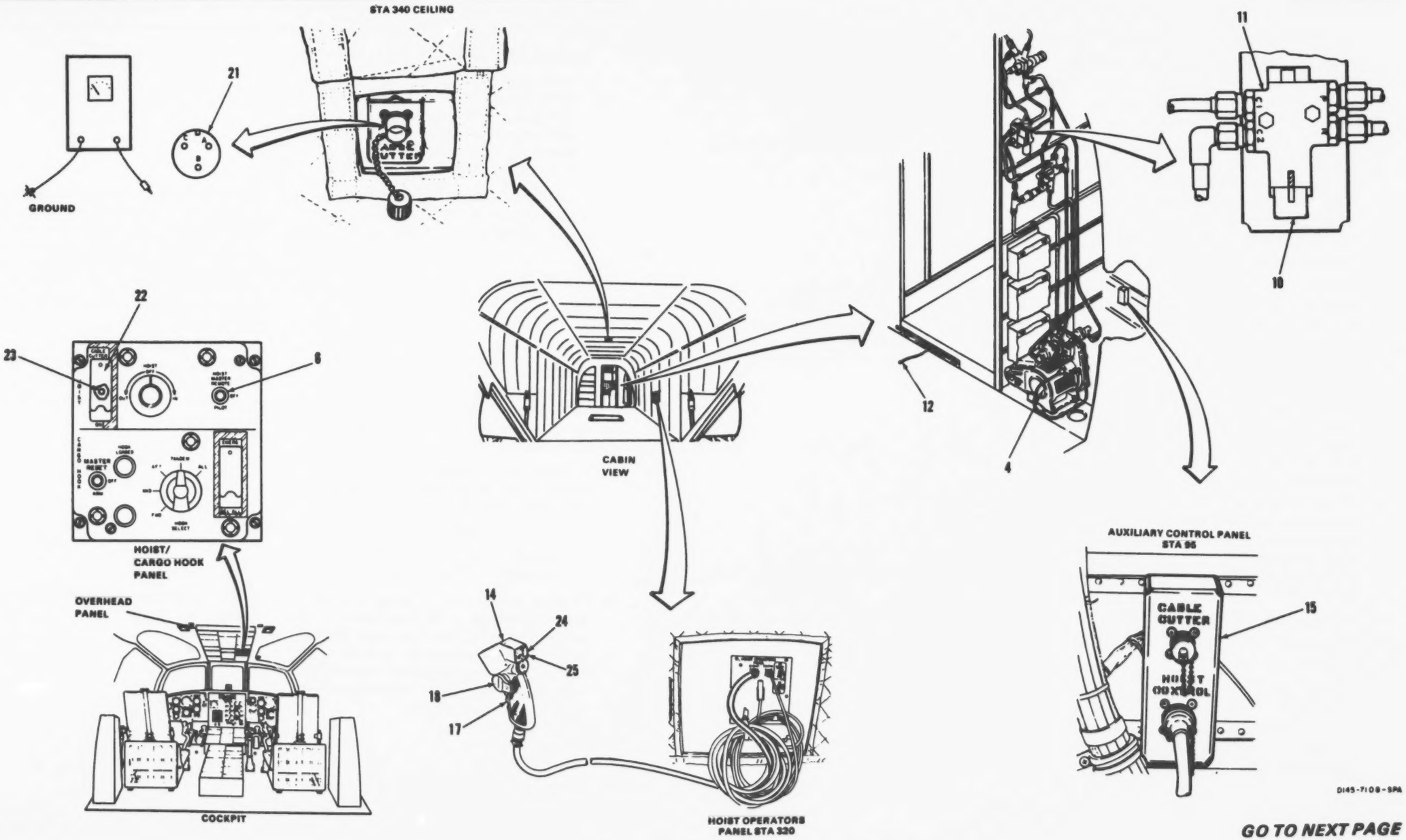
14-1.4 CARGO/RESCUE WINCH SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
12. **Set HOIST MASTER switch (7) to REMOTE.**	
13. Connect winch control grip (14) to auxiliary panel (15) with cable (16).	
14. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to OUT. Reel out enough cable to hook up a load in rescue mode (TM 55-1520-240-10). Then release controls (17 and 18).**	Cable (12) shall reel off winch. If it does not, go to task 14-1.9.
15. **Connect 600-pound load to cable hook.**	
16. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to IN. Release controls (17 and 18) after load clears ground.**	Winch (4) shall raise load and hold it steady. If winch does not raise load, go to task 14-1.10. If winch sounded like it was beginning to operate but stopped, replace winch. If load creeps down after grip controls released, replace winch.
17. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to OUT. Release controls (17 and 18) after tension is off cable. Disconnect 600-pound load.**	
18. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to OUT. Reel out enough cable to hook up an external load. Then release controls (17 and 18).**	
19. **Set winch shift lever (3) to CARGO.**	
20. Rig winch (4) for cargo mode (TM 55-1520-240-10).	
▌21. Deleted.	
22. **Connect winch control grip (14) to sta 502 HOIST CONTROL receptacle (19) with cable (16).**	

TASK	RESULT
WARNING **Cable failure during loading operations will result in cable whiplash within the cabin. This may result in personnel injury. Stand aft and to one side of load to avoid whiplash exposure.**	
23. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to IN.**	Winch (4) shall reel in cable (12) and stop when second layer of cable starts on cable drum. If winch does not reel in cable, go to task 14-1.11. If winch continues to operate, release controls (17 and 18). Adjust overload limit switch. If switch is adjusted, repeat steps 18 thru 23. If winch still does not stop when second layer of cable wraps begins, replace winch.
24. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to OUT. Release controls (17 and 18) after tension is off cable (12). Disconnect load from cable hook.**	Cable (12) shall reel off winch (4). If winch does not operate, locate open in wire W668-33-20, W697-16-20, or W645-238-20 between receptacle 132J12 and TB17. Repair or replace wire as required.
25. **Connect winch control grip (14) to HOIST OPERATOR'S panel receptacle (20) with cable (16).**	
NOTE If necessary, reel in several feet of cable to perform following step.	
26. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to OUT. Release controls (17 and 18) when several feet of cable (12) are reeled out. Have helper keep slight tension on cable. Helper must wear gloves.**	Cable (12) shall reel off winch (4). If it does not, go to task 14-1.12.

GO TO NEXT PAGE

14-1.4 CARGO/RESCUE WINCH SYSTEM OPERATIONAL CHECK (Continued)



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14-1.4 CARGO/RESCUE WINCH SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
CAUTION **Do not allow cable end to reel in and jam in a pulley. Damage to winch, pulley, or airframe can occur.**	
27. On winch control grip (14), **press and hold WINCH ARMING TRIGGER switch (17) and set WINCH CABLE control (18) to IN.**	Winch (4) shall reel in cable (12) and stop when 12 to 20 inches of cable remain out. If winch does not operate, locate open in wire W508-4-20, W673-23-20, or W639-402-20 between receptacle 132J11 and TB17. Repair or replace wire as required. If more or less than 12 to 20 inches of cable is out when winch stops, adjust cargo in-limit switch. If switch is adjusted, repeat steps 18 thru 27. If more or less than 12 to 20 inches of cable is out, replace winch.
28. **Connect multimeter, set to measure 28 vdc between pin A (+) of CABLE CUTTER receptacle (21) and ground.**	
29. **Lift switch guard (22) and set and hold CABLE CUTTER switch (23) to ON.**	Multimeter shall indicate 28vdc. If it does not , go to task 14-1.13.
30. Release CABLE CUTTER switch (23) and close switchguard (22).	
31. On winch control grip (14), **lift switch guard (24) and press and hold CABLE CUTTER switch (25).**	Multimeter shall indicate 28vdc. If it does not, go to task 14-1.14.
32. Release CABLE CUTTER switch (25) and close switchguard (24).	
33. **Repeat steps 31 and 32 with winch control (14) connected to auxiliary panel (15) with cable (16).** Then disconnect multimeter and proceed to step 34.	
34. **Set HOIST MASTER switch (6) to OFF.**	
35. **Check** that **index on control valve knob (10)** aligns with stripe on valve body. Lockwire knob to structure. Use lockwire (E203.1).	Align stripe if required.

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23
- Battery disconnected
- Hydraulic power off
- Electrical power off
- Disconnect and stow winch control grip.
- Disconnect and stow cable cutter.
- Install heater compartment acoustic blanket
- Install center cargo hook.

END OF TASK

14-1.5 HOIST CONT CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

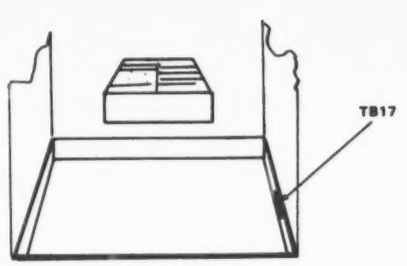
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

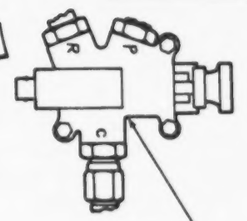
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

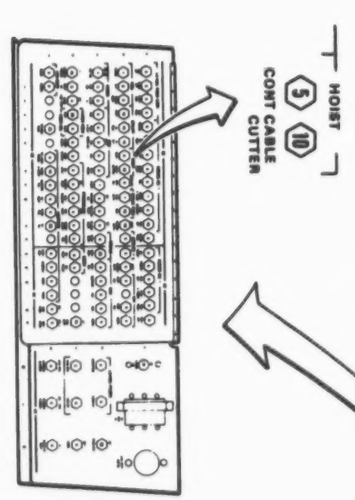
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

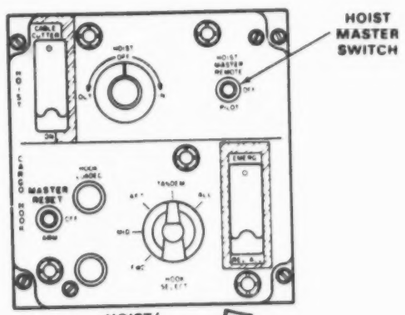


VIEW LOOKING FORWARD AND DOWN PASSAGEWAY FLOOR REMOVED

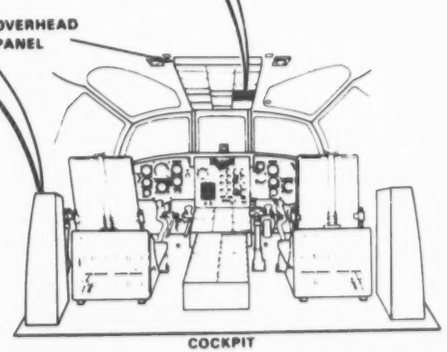




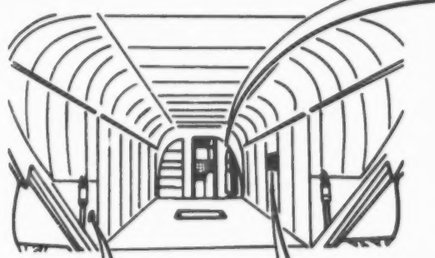
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

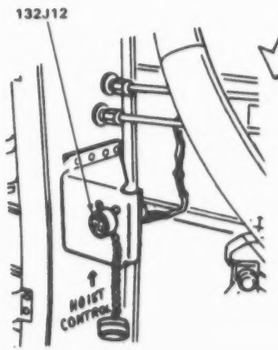


HOIST/ CARGO HOOK PANEL

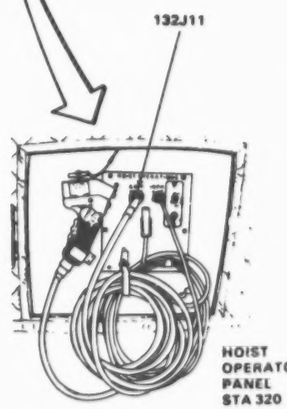


COCKPIT

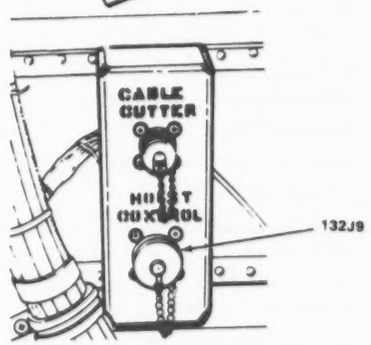

CABIN VIEW



STA 502



HOIST OPERATORS PANEL STA 320



AUXILIARY CONTROL PANEL STA 95

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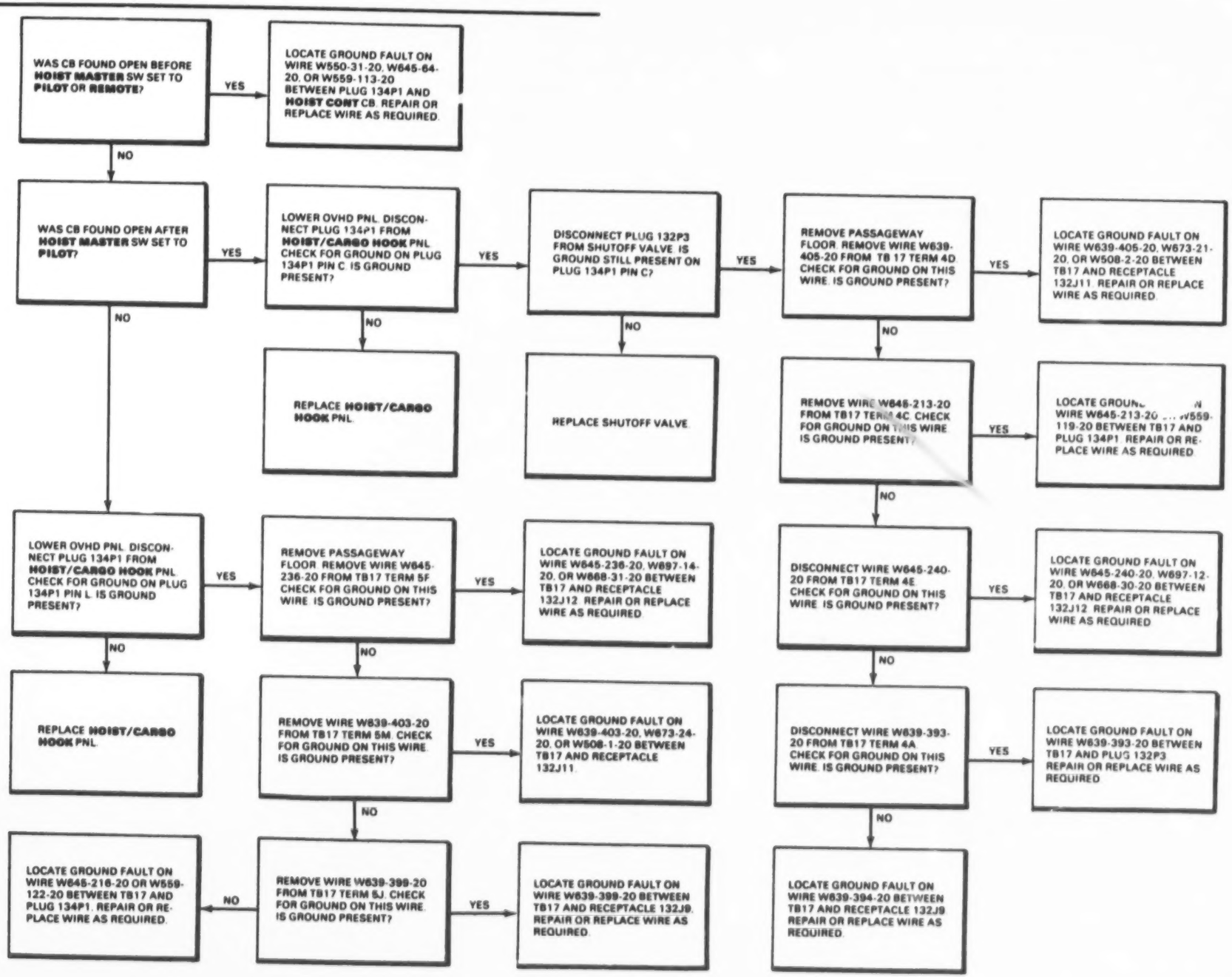
14-1.5 HOIST CONT CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CB FOUND OPEN BEFORE HOIST MASTER SW SET TO PILOT OR REMOTE?
YES
LOCATE GROUND FAULT ON WIRE W550-31-20, W645-64-20, OR W559-113-20 BETWEEN PLUG 134P1 AND HOIST CONT CB. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
WAS CB FOUND OPEN AFTER HOIST MASTER SW SET TO PILOT?
YES
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P1 PIN C. IS GROUND PRESENT?
YES
DISCONNECT PLUG 132P3 FROM SHUTOFF VALVE. IS GROUND STILL PRESENT ON PLUG 134P1 PIN C?
YES
REMOVE PASSAGEWAY FLOOR. REMOVE WIRE W639-405-20 FROM TB 17 TERM 4D. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W639-405-20, W673-21-20, OR W508-2-20 BETWEEN TB17 AND RECEPTACLE 132J11. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
REPLACE SHUTOFF VALVE.
NO
REMOVE WIRE W645-213-20 FROM TB17 TERM 4C. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-213-20 ... W559-119-20 BETWEEN TB17 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P1 PIN L. IS GROUND PRESENT?
YES
REMOVE PASSAGEWAY FLOOR. REMOVE WIRE W645-236-20 FROM TB17 TERM 5F. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-236-20, W697-14-20, OR W668-31-20 BETWEEN TB17 AND RECEPTACLE 132J12. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT WIRE W645-240-20 FROM TB17 TERM 4E. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W645-240-20, W697-12-20, OR W668-30-20 BETWEEN TB17 AND RECEPTACLE 132J12. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
REMOVE WIRE W639-403-20 FROM TB17 TERM 5M. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W639-403-20, W673-24-20, OR W508-1-20 BETWEEN TB17 AND RECEPTACLE 132J11.
NO
DISCONNECT WIRE W639-393-20 FROM TB17 TERM 4A. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W639-393-20 BETWEEN TB17 AND PLUG 132P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W645-216-20 OR W559-122-20 BETWEEN TB17 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE WIRE W639-399-20 FROM TB17 TERM 5J. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W639-399-20 BETWEEN TB17 AND RECEPTACLE 132J9. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W639-394-20 BETWEEN TB17 AND RECEPTACLE 132J9. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

14-1.6 HOIST CABLE CUTTER CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

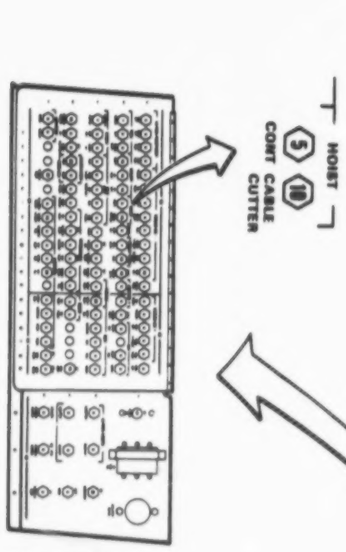
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

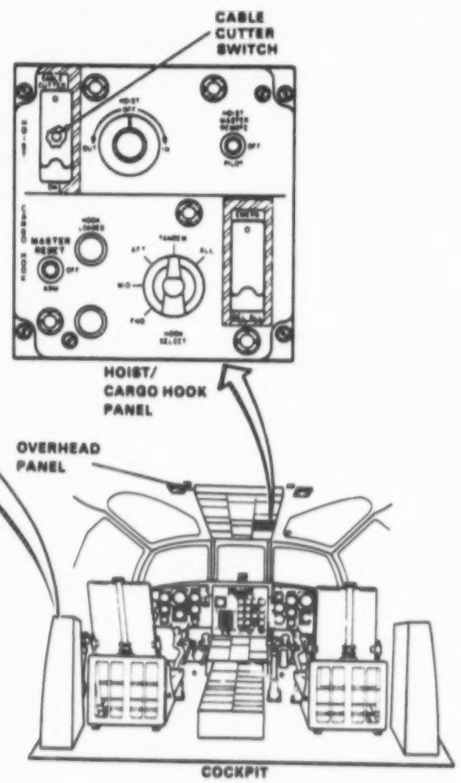
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



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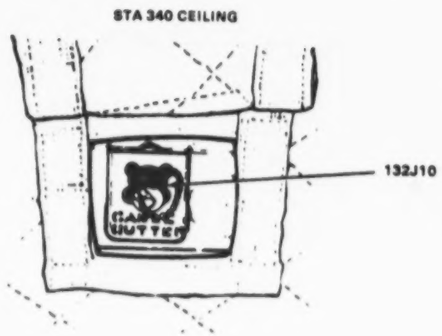

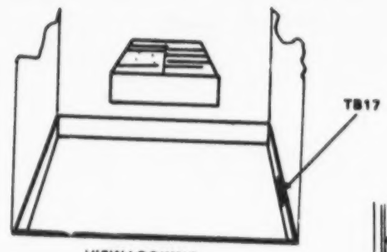

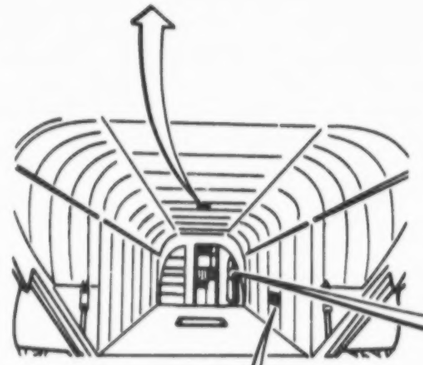

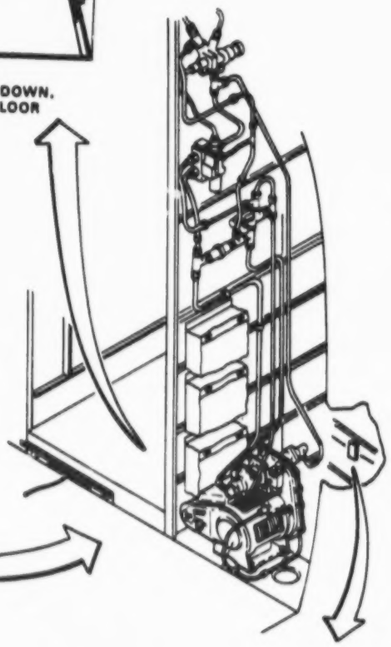

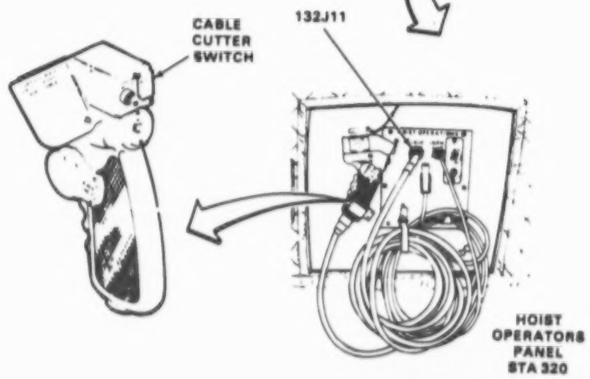

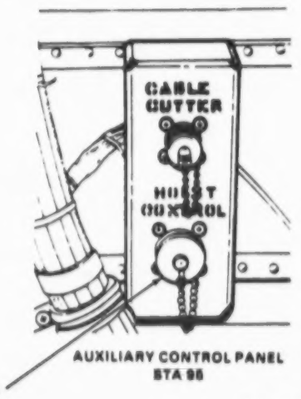

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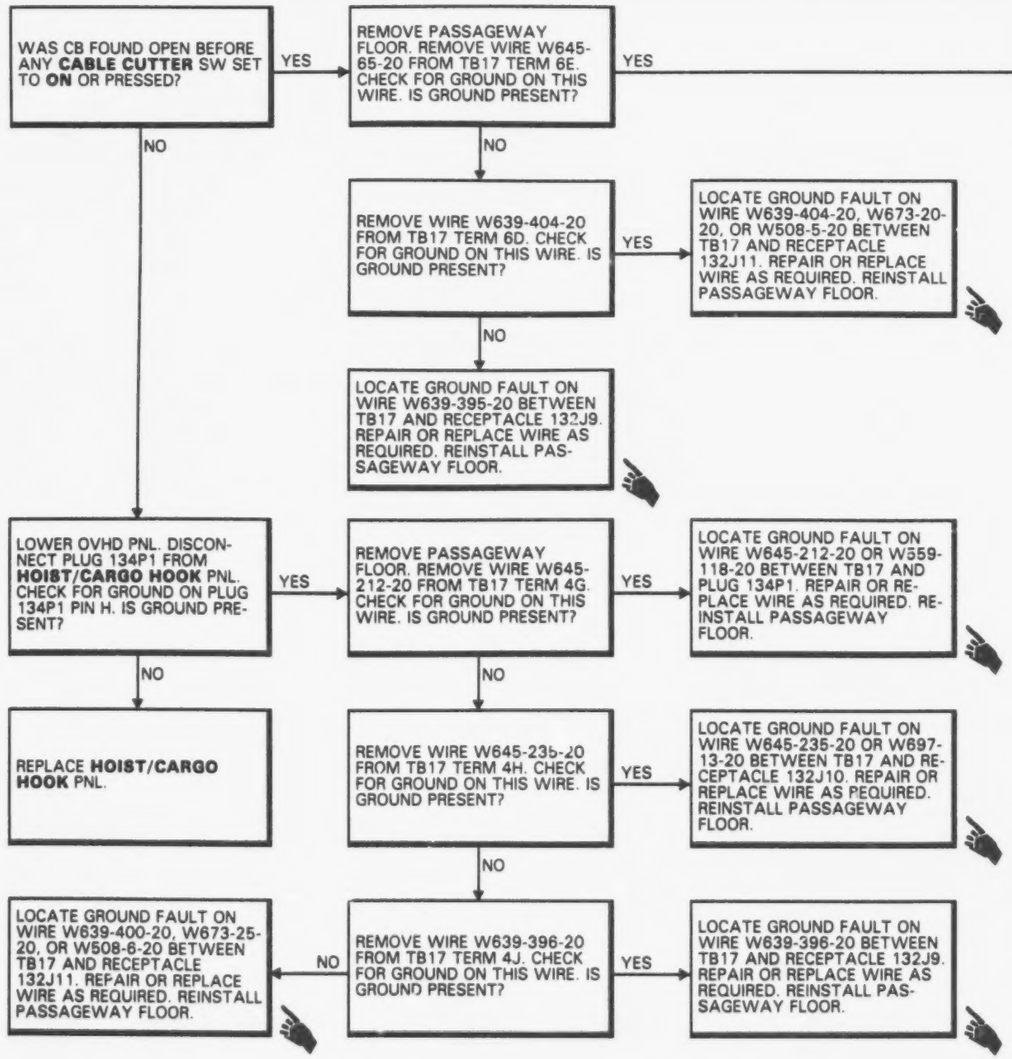
14-1.6 HOIST CABLE CUTTER CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CB FOUND OPEN BEFORE ANY **CABLE CUTTER** SW SET TO **ON** OR PRESSED?
YES
NO
REMOVE PASSAGEWAY FLOOR. REMOVE WIRE W645-65-20 FROM TB17 TERM 6E. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
NO
REMOVE WIRE W639-404-20 FROM TB17 TERM 6D. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W639-404-20, W673-20-20, OR W508-5-20 BETWEEN TB17 AND RECEPTACLE 132J11. REPAIR OR REPLACE WIRE AS REQUIRED. REINSTALL PASSAGEWAY FLOOR.
LOCATE GROUND FAULT ON WIRE W639-395-20 BETWEEN TB17 AND RECEPTACLE 132J9. REPAIR OR REPLACE WIRE AS REQUIRED. REINSTALL PASSAGEWAY FLOOR.
REINSTALL PASSAGEWAY FLOOR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM **HOIST/CARGO HOOK** PNL. IS GROUND STILL PRESENT ON WIRE W645-65-20?
YES
NO
REPLACE **HOIST/CARGO HOOK** PNL.
OPEN NO. 1 PDP. DISCONNECT TWO WIRES FROM CIRCUIT SIDE OF **HOIST CABLE CUTTER** CB 132CB1. CHECK FOR GROUND ON WIRE W550-29-20. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W550-30-20, W645-63-20, OR W559-114-20 BETWEEN **HOIST CABLE CUTTER** CB132CB1 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W550-29-20 OR W645-65-20 BETWEEN **HOIST CABLE CUTTER** CB 132CB1 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM **HOIST/CARGO HOOK** PNL. CHECK FOR GROUND ON PLUG 134P1 PIN H. IS GROUND PRESENT?
YES
NO
REPLACE **HOIST/CARGO HOOK** PNL.
REMOVE PASSAGEWAY FLOOR. REMOVE WIRE W645-212-20 FROM TB17 TERM 4G. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
NO
REMOVE WIRE W645-235-20 FROM TB17 TERM 4H. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
NO
REMOVE WIRE W639-396-20 FROM TB17 TERM 4J. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W639-400-20, W673-25-20, OR W508-6-20 BETWEEN TB17 AND RECEPTACLE 132J11. REPAIR OR REPLACE WIRE AS REQUIRED. REINSTALL PASSAGEWAY FLOOR.
LOCATE GROUND FAULT ON WIRE W645-212-20 OR W559-118-20 BETWEEN TB17 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED. REINSTALL PASSAGEWAY FLOOR.
LOCATE GROUND FAULT ON WIRE W645-235-20 OR W697-13-20 BETWEEN TB17 AND RECEPTACLE 132J10. REPAIR OR REPLACE WIRE AS PEQUIRED. REINSTALL PASSAGEWAY FLOOR.
LOCATE GROUND FAULT ON WIRE W639-396-20 BETWEEN TB17 AND RECEPTACLE 132J9. REPAIR OR REPLACE WIRE AS REQUIRED. REINSTALL PASSAGEWAY FLOOR.

END OF TASK

14-1.7 CABLE DOE$ NOT REEL OUT WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter
Abestos Gloves (E187)

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

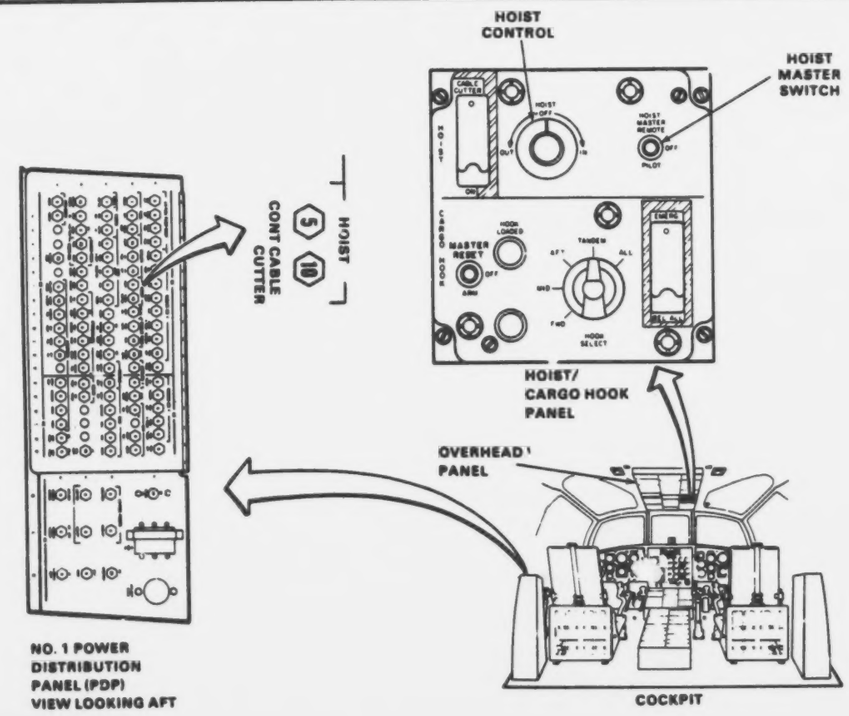
General Safety Instructions:

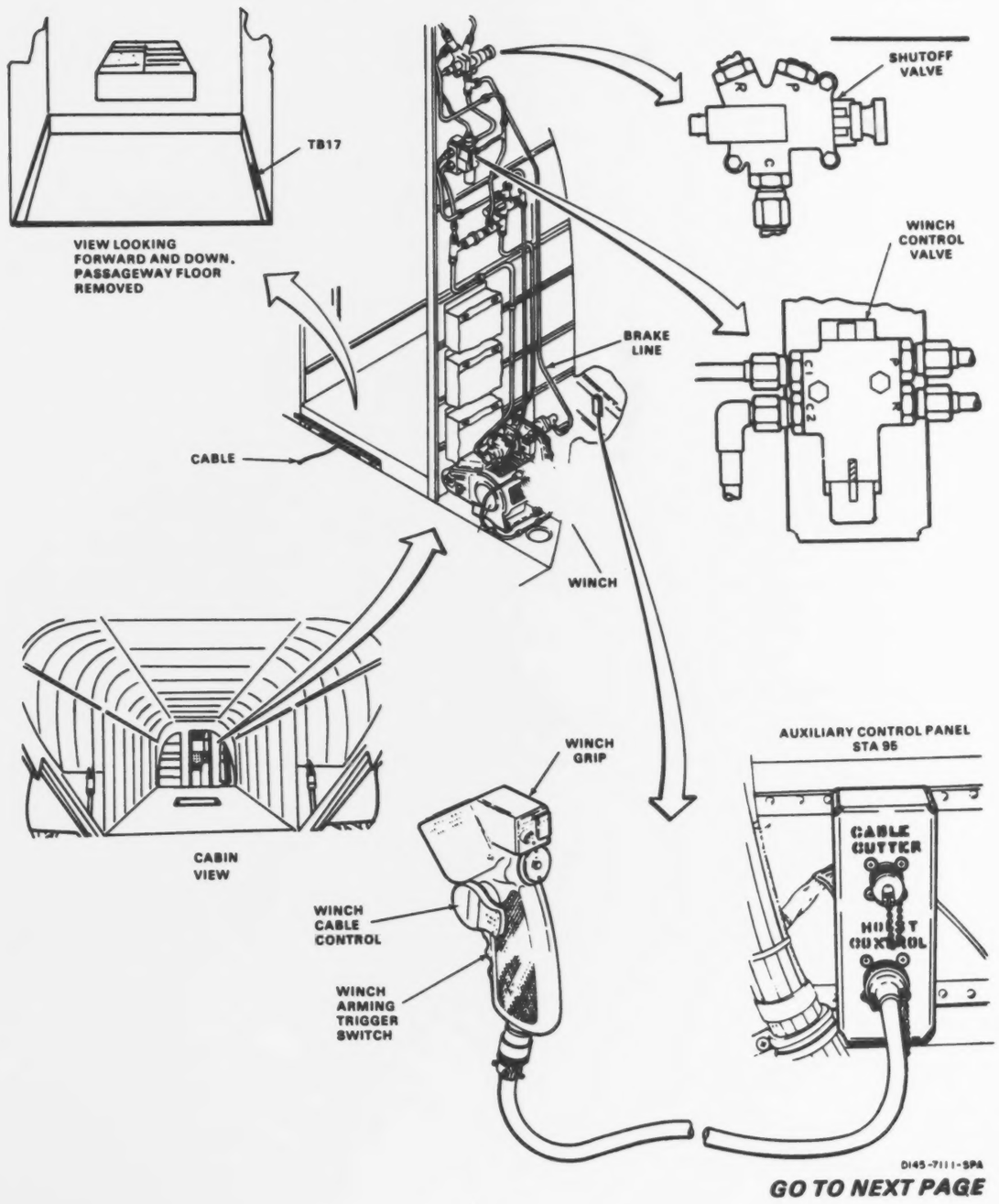
WARNING

Wear gloves when handling wire rope (cable). Otherwise, injury to hands can result.

NOTE

Have helper keep tension on wire rope (cable) when reeling cable. Cable will reel evenly and will not snarl. Helper must wear gloves.





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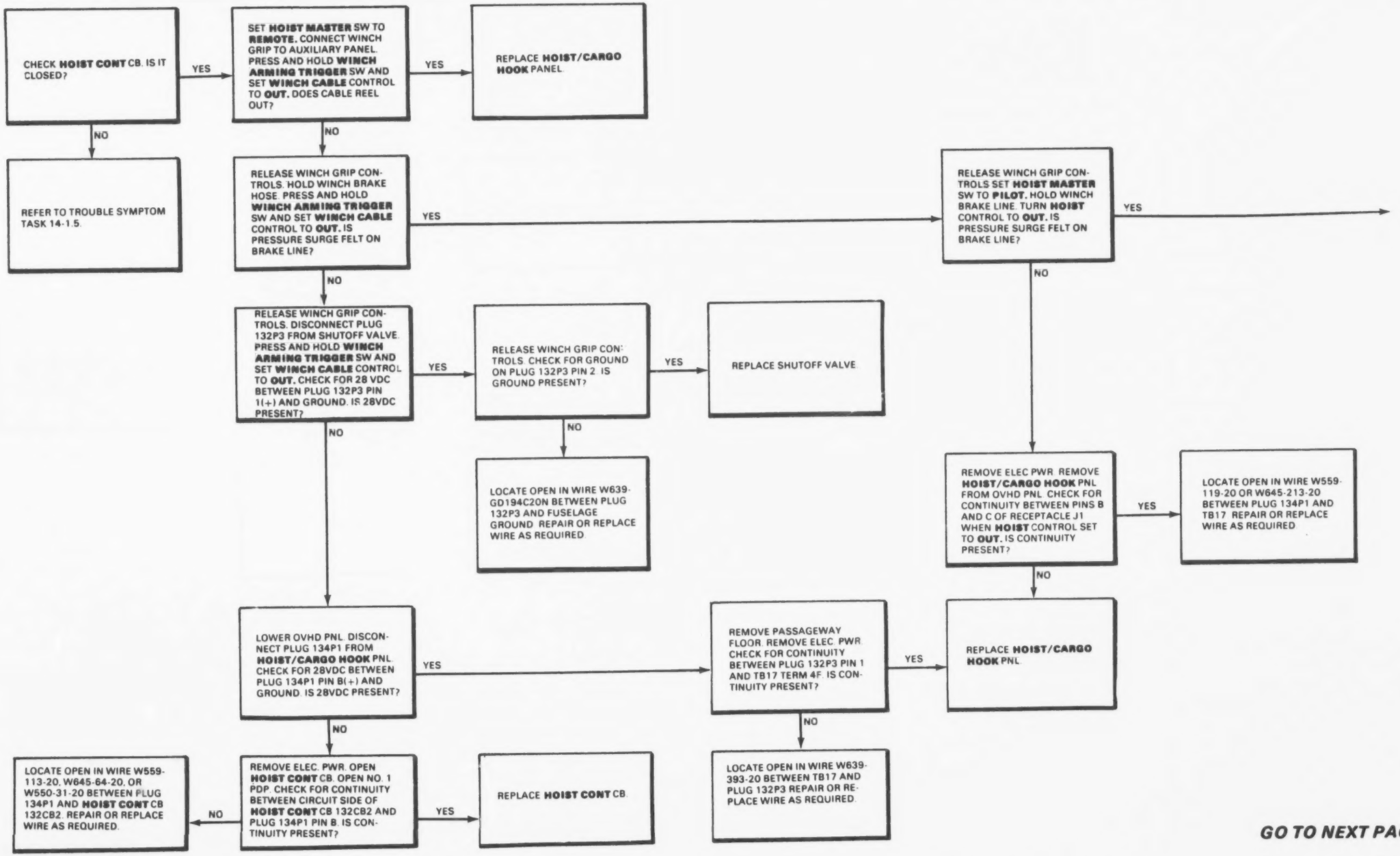
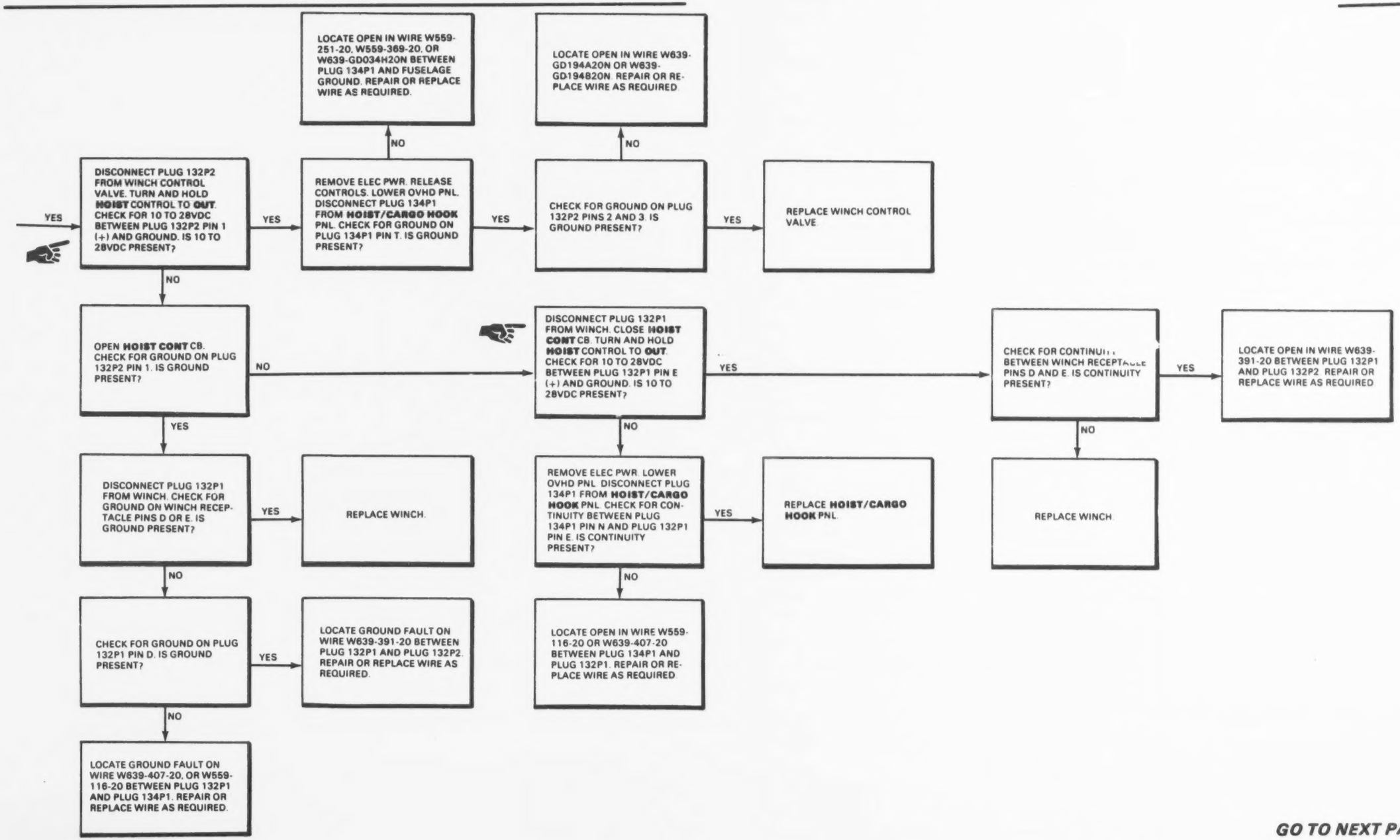
14-1.7 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL (Continued)


CHECK **HOIST CONT** CB. IS IT CLOSED?
YES
SET **HOIST MASTER** SW TO **REMOTE**. CONNECT WINCH GRIP TO AUXILIARY PANEL. PRESS AND HOLD **WINCH ARMING TRIGGER** SW AND SET **WINCH CABLE** CONTROL TO **OUT**. DOES CABLE REEL OUT?
YES
REPLACE **HOIST/CARGO HOOK** PANEL.
NO
REFER TO TROUBLE SYMPTOM TASK 14-1.5.
NO
RELEASE WINCH GRIP CONTROLS. HOLD WINCH BRAKE HOSE. PRESS AND HOLD **WINCH ARMING TRIGGER** SW AND SET **WINCH CABLE** CONTROL TO **OUT**. IS PRESSURE SURGE FELT ON BRAKE LINE?
YES
RELEASE WINCH GRIP CONTROLS SET **HOIST MASTER** SW TO **PILOT**. HOLD WINCH BRAKE LINE. TURN **HOIST** CONTROL TO **OUT**. IS PRESSURE SURGE FELT ON BRAKE LINE?
YES
NO
RELEASE WINCH GRIP CONTROLS. DISCONNECT PLUG 132P3 FROM SHUTOFF VALVE. PRESS AND HOLD **WINCH ARMING TRIGGER** SW AND SET **WINCH CABLE** CONTROL TO **OUT**. CHECK FOR 28 VDC BETWEEN PLUG 132P3 PIN 1(+) AND GROUND. IS 28VDC PRESENT?
YES
RELEASE WINCH GRIP CONTROLS. CHECK FOR GROUND ON PLUG 132P3 PIN 2. IS GROUND PRESENT?
YES
REPLACE SHUTOFF VALVE.
NO
LOCATE OPEN IN WIRE W639-GD194C20N BETWEEN PLUG 132P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. REMOVE **HOIST/CARGO HOOK** PNL FROM OVHD PNL. CHECK FOR CONTINUITY BETWEEN PINS B AND C OF RECEPTACLE J1 WHEN **HOIST** CONTROL SET TO **OUT**. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-119-20 OR W645-213-20 BETWEEN PLUG 134P1 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM **HOIST/CARGO HOOK** PNL. CHECK FOR 28VDC BETWEEN PLUG 134P1 PIN B(+) AND GROUND. IS 28VDC PRESENT?
YES
REMOVE PASSAGEWAY FLOOR. REMOVE ELEC. PWR. CHECK FOR CONTINUITY BETWEEN PLUG 132P3 PIN 1 AND TB17 TERM 4F. IS CONTINUITY PRESENT?
YES
REPLACE **HOIST/CARGO HOOK** PNL.
NO
LOCATE OPEN IN WIRE W639-393-20 BETWEEN TB17 AND PLUG 132P3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC. PWR. OPEN **HOIST CONT** CB. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF **HOIST CONT** CB 132CB2 AND PLUG 134P1 PIN B. IS CONTINUITY PRESENT?
YES
REPLACE **HOIST CONT** CB.
NO
LOCATE OPEN IN WIRE W559-113-20, W645-64-20, OR W550-31-20 BETWEEN PLUG 134P1 AND **HOIST CONT** CB 132CB2. REPAIR OR REPLACE WIRE AS REQUIRED.

GO TO NEXT PAGE

14-1.7 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL (Continued)


DISCONNECT PLUG 132P2 FROM WINCH CONTROL VALVE. TURN AND HOLD HOIST CONTROL TO OUT. CHECK FOR 10 TO 28VDC BETWEEN PLUG 132P2 PIN 1 (+) AND GROUND. IS 10 TO 28VDC PRESENT?
YES
NO
REMOVE ELEC PWR. RELEASE CONTROLS. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P1 PIN T. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-251-20, W559-369-20, OR W639-GD034H20N BETWEEN PLUG 134P1 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR GROUND ON PLUG 132P2 PINS 2 AND 3. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-GD194A20N OR W639-GD194B20N. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE WINCH CONTROL VALVE
OPEN HOIST CONT CB. CHECK FOR GROUND ON PLUG 132P2 PIN 1. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG 132P1 FROM WINCH. CHECK FOR GROUND ON WINCH RECEPTACLE PINS D OR E. IS GROUND PRESENT?
YES
NO
REPLACE WINCH.
CHECK FOR GROUND ON PLUG 132P1 PIN D. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W639-391-20 BETWEEN PLUG 132P1 AND PLUG 132P2. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W639-407-20, OR W559-116-20 BETWEEN PLUG 132P1 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 132P1 FROM WINCH. CLOSE HOIST CONT CB. TURN AND HOLD HOIST CONTROL TO OUT. CHECK FOR 10 TO 28VDC BETWEEN PLUG 132P1 PIN E (+) AND GROUND. IS 10 TO 28VDC PRESENT?
YES
NO
REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P1 PIN N AND PLUG 132P1 PIN E. IS CONTINUITY PRESENT?
YES
NO
REPLACE HOIST/CARGO HOOK PNL.
LOCATE OPEN IN WIRE W559-116-20 OR W639-407-20 BETWEEN PLUG 134P1 AND PLUG 132P1. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN WINCH RECEPTACLE PINS D AND E. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-391-20 BETWEEN PLUG 132P1 AND PLUG 132P2. REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE WINCH.

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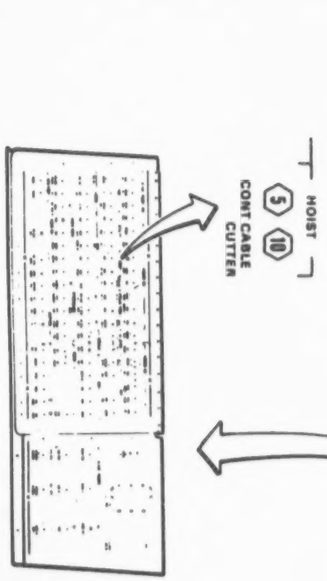
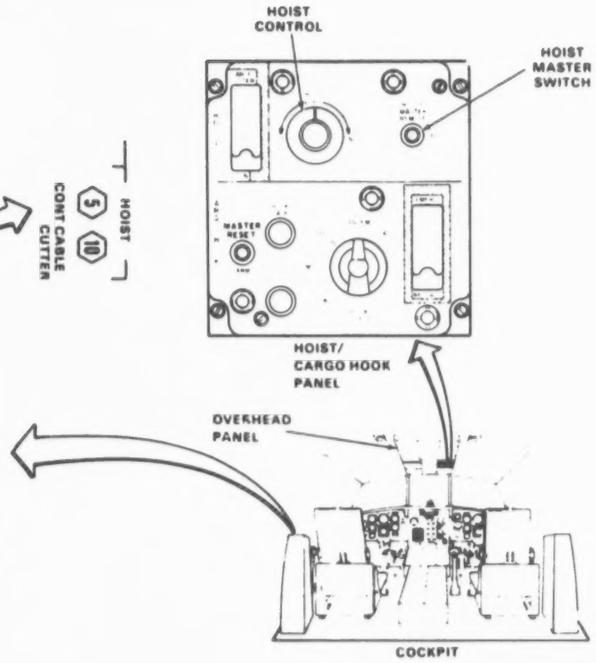
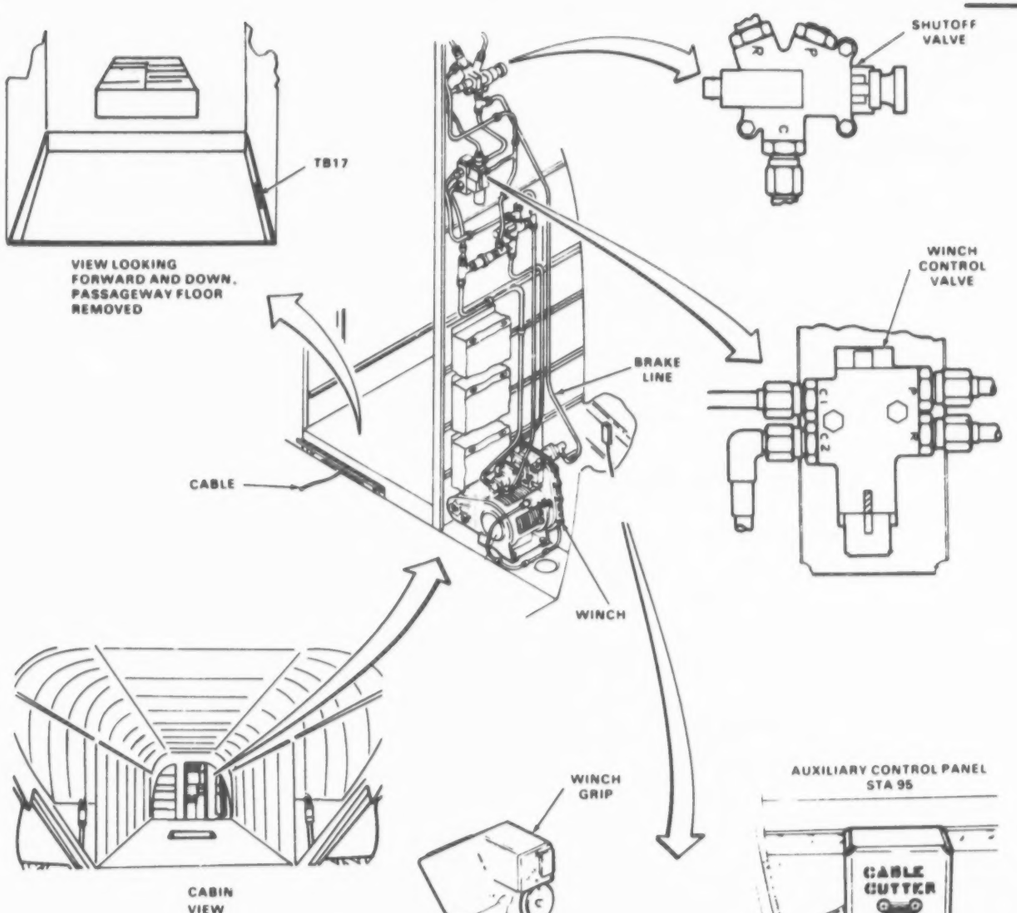
14-1.7 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL (Continued)



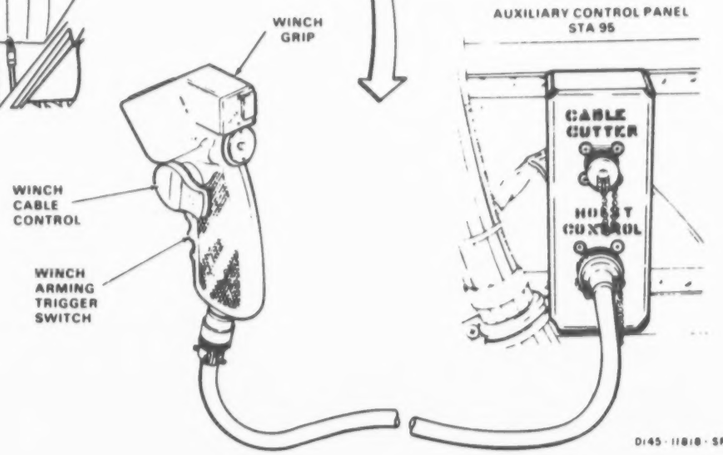
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



VIEW LOOKING FORWARD AND DOWN, PASSAGEWAY FLOOR REMOVED



CABIN VIEW



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D145-11818-SPA

END OF TASK

14-1.8 CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter
Asbestos Gloves (E187)

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power On

General Safety Instructions:

WARNING

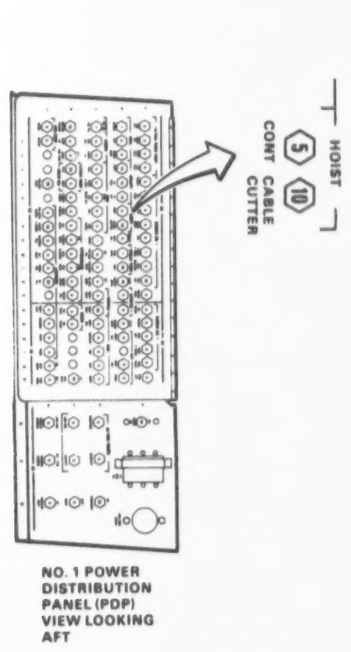
Cable cutter contains an electro explosive device (EED). Do not measure cutter resistance at plug pin A. Multimeter may fire EED resulting in personnel injury.

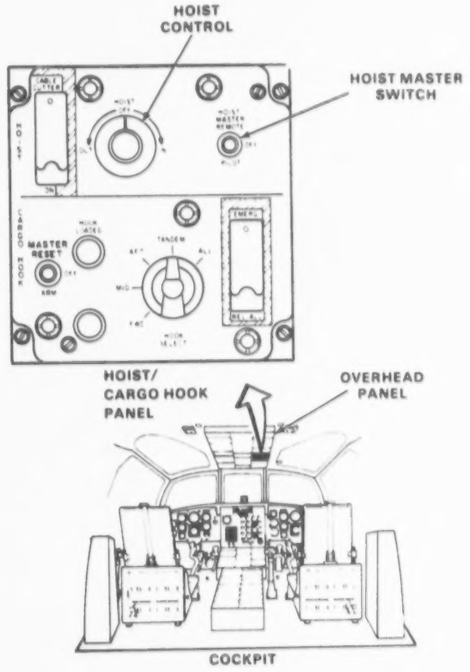
WARNING

Wear gloves when handling wire rope (cable). Otherwise injury to hands can result.

NOTE

Have helper keep tension on wire rope (cable) when reeling cable. Cable will reel evenly and will not snarl. Helper must wear gloves.





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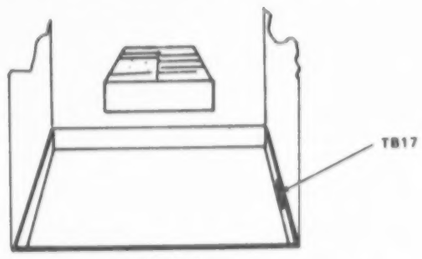

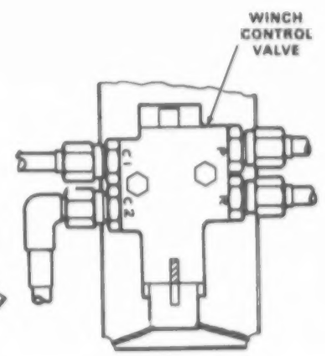

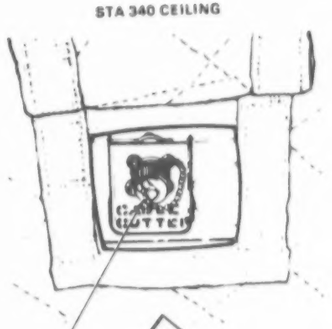

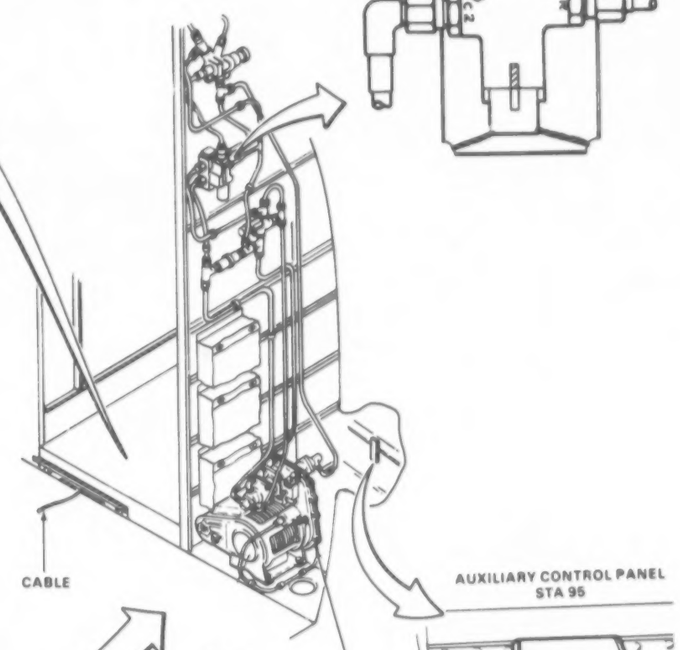

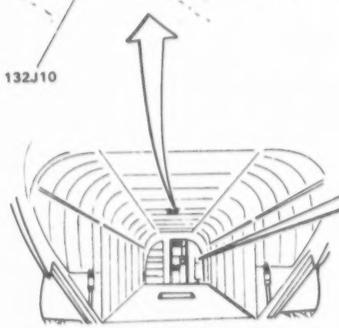

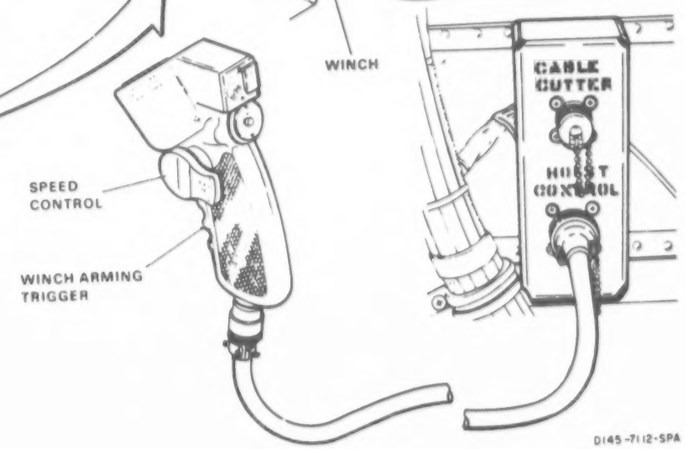

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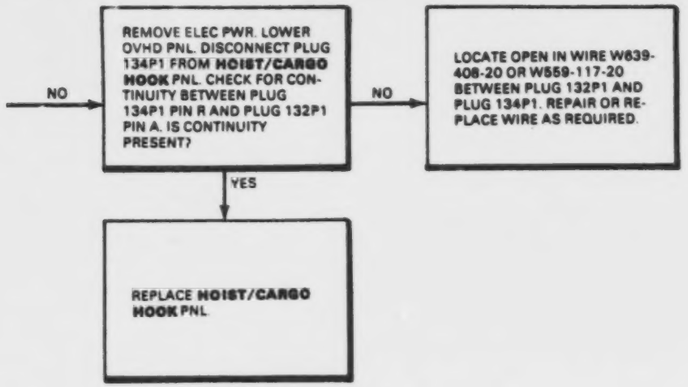
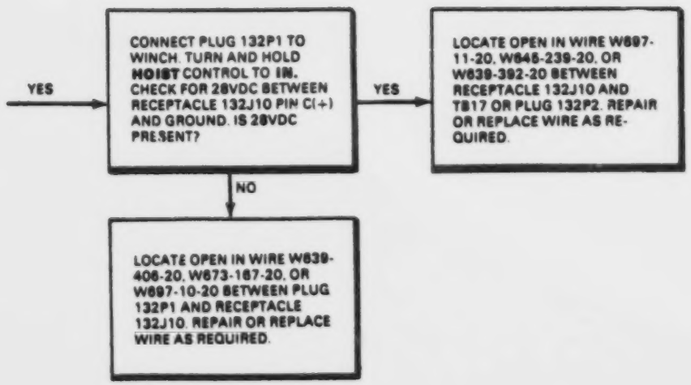
14-1.8 CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL (Continued)


REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P1 PIN R AND PLUG 132P1 PIN A. IS CONTINUITY PRESENT?
NO
NO
LOCATE OPEN IN WIRE W639-408-20 OR W559-117-20 BETWEEN PLUG 132P1 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
REPLACE HOIST/CARGO HOOK PNL.


YES
CONNECT PLUG 132P1 TO WINCH. TURN AND HOLD HOIST CONTROL TO IN. CHECK FOR 28VDC BETWEEN RECEPTACLE 132J10 PIN C(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W697-11-20, W645-239-20, OR W639-392-20 BETWEEN RECEPTACLE 132J10 AND TB17 OR PLUG 132P2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W639-406-20, W673-187-20, OR W697-10-20 BETWEEN PLUG 132P1 AND RECEPTACLE 132J10. REPAIR OR REPLACE WIRE AS REQUIRED.

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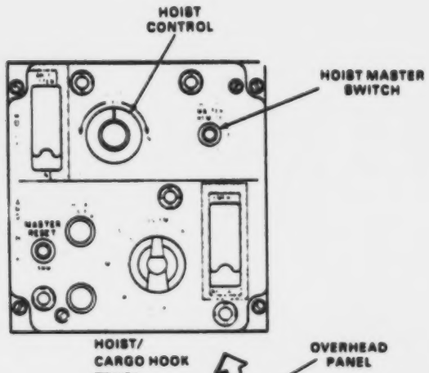
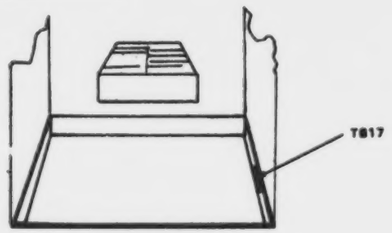
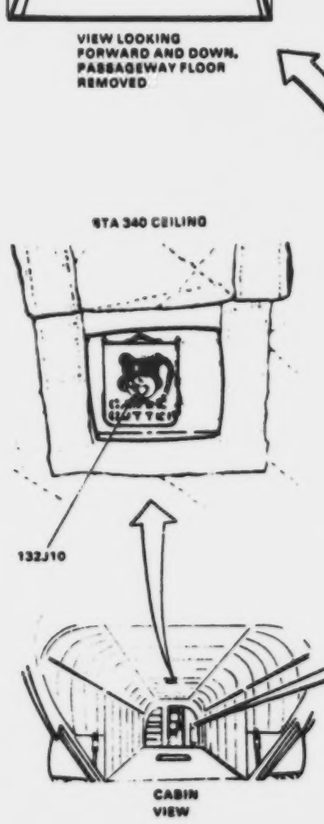
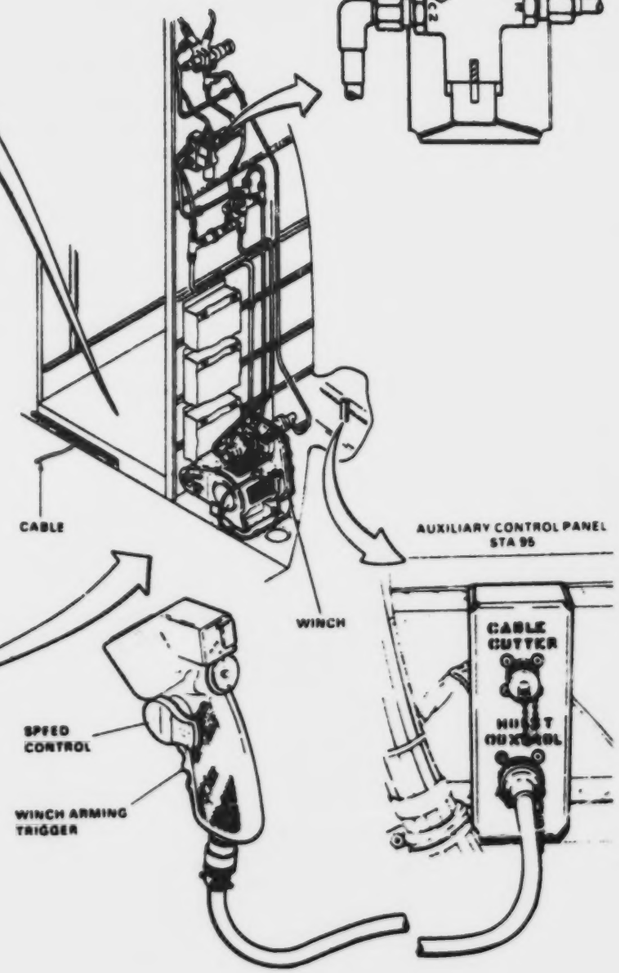
14-1.8 CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED AT HOIST/CARGO HOOK PANEL (Continued)









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END OF TASK

14-1.9 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH CONTROL GRIP AT STA 95 AUXILIARY PANEL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter
Asbestos Gloves (E187)

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

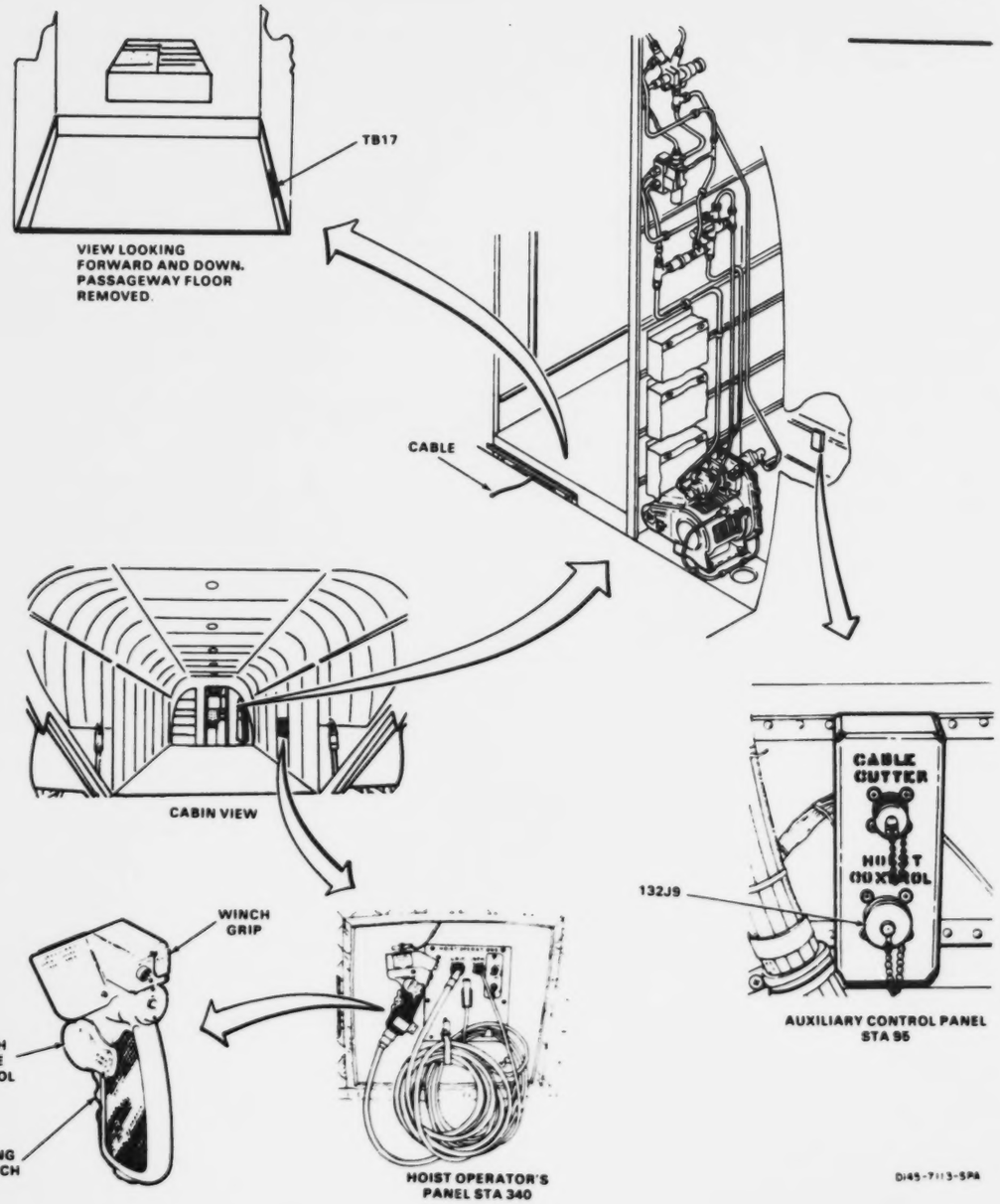
General Safety Instructions:

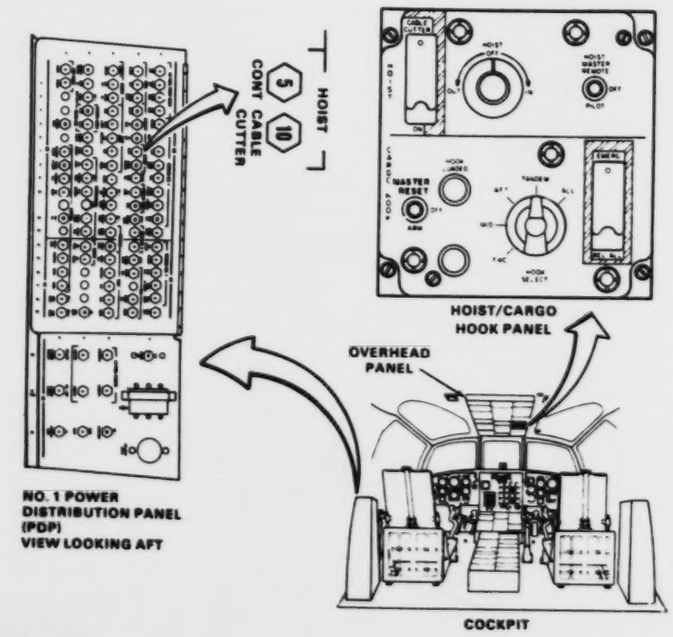
WARNING

Wear gloves when handling wire rope (cable). Otherwise injury to hands can result.

NOTE

Have helper keep tension on wire rope (cable) when reeling cable. Cable will reel evenly and will not snarl. Helper must wear gloves.





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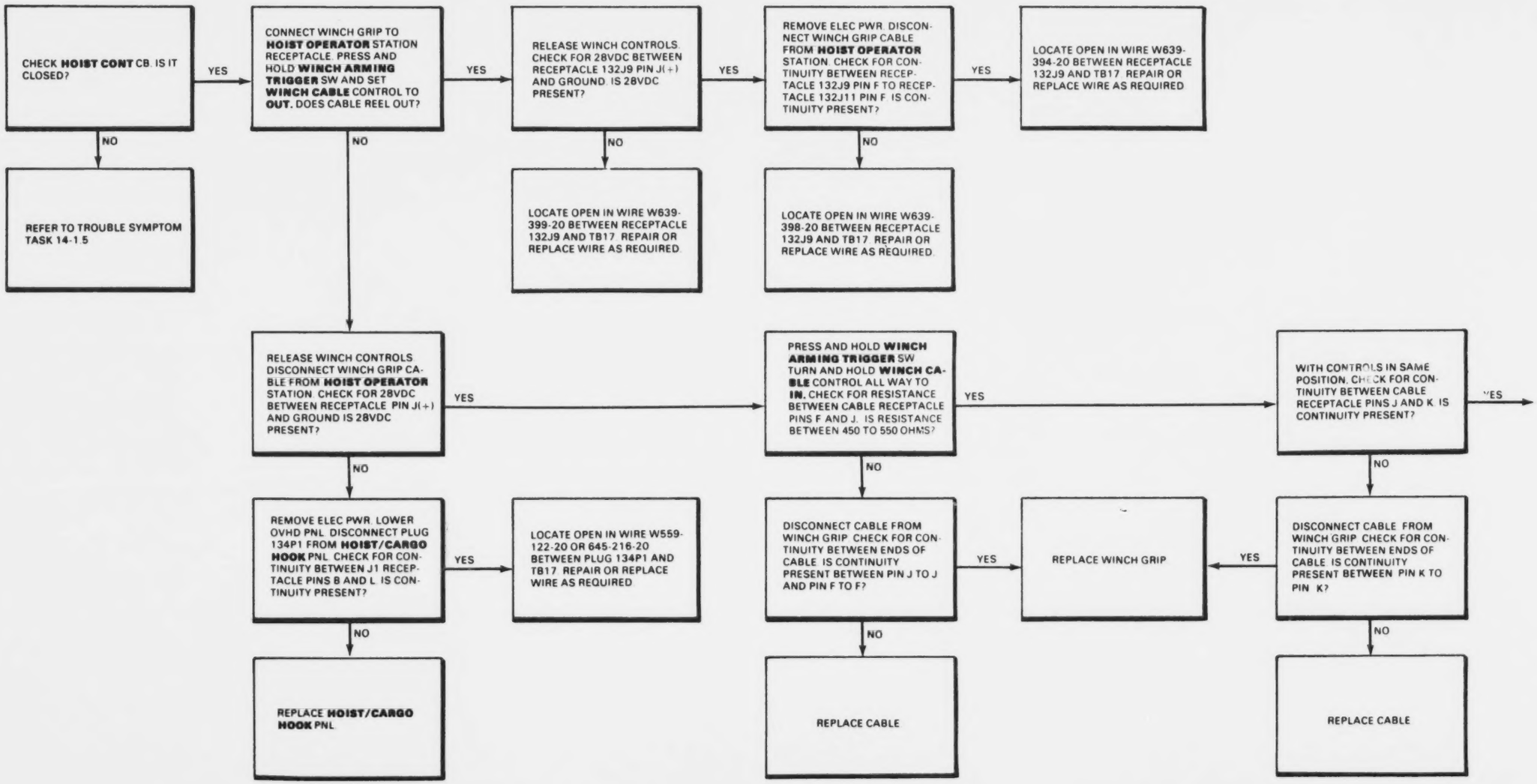
14-1.9 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH CONTROL GRIP AT STA 95 AUXILIARY PANEL (Continued)


CHECK **HOIST CONT** CB. IS IT CLOSED?
YES
NO
REFER TO TROUBLE SYMPTOM TASK 14-1.5
CONNECT WINCH GRIP TO **HOIST OPERATOR** STATION RECEPTACLE. PRESS AND HOLD **WINCH ARMING TRIGGER** SW AND SET **WINCH CABLE** CONTROL TO **OUT.** DOES CABLE REEL OUT?
YES
NO
RELEASE WINCH CONTROLS. CHECK FOR 28VDC BETWEEN RECEPTACLE 132J9 PIN J(+) AND GROUND. IS 28VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-399-20 BETWEEN RECEPTACLE 132J9 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. DISCONNECT WINCH GRIP CABLE FROM **HOIST OPERATOR** STATION. CHECK FOR CONTINUITY BETWEEN RECEPTACLE 132J9 PIN F TO RECEPTACLE 132J11 PIN F. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W639-398-20 BETWEEN RECEPTACLE 132J9 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W639-394-20 BETWEEN RECEPTACLE 132J9 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
RELEASE WINCH CONTROLS. DISCONNECT WINCH GRIP CABLE FROM **HOIST OPERATOR** STATION. CHECK FOR 28VDC BETWEEN RECEPTACLE PIN J(+) AND GROUND IS 28VDC PRESENT?
YES
NO
REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM **HOIST/CARGO HOOK** PNL. CHECK FOR CONTINUITY BETWEEN J1 RECEPTACLE PINS B AND L. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-122-20 OR 645-216-20 BETWEEN PLUG 134P1 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE **HOIST/CARGO HOOK** PNL
PRESS AND HOLD **WINCH ARMING TRIGGER** SW. TURN AND HOLD **WINCH CABLE** CONTROL ALL WAY TO **IN.** CHECK FOR RESISTANCE BETWEEN CABLE RECEPTACLE PINS F AND J. IS RESISTANCE BETWEEN 450 TO 550 OHMS?
YES
NO
DISCONNECT CABLE FROM WINCH GRIP. CHECK FOR CONTINUITY BETWEEN ENDS OF CABLE. IS CONTINUITY PRESENT BETWEEN PIN J TO J AND PIN F TO F?
YES
NO
REPLACE CABLE
REPLACE WINCH GRIP
WITH CONTROLS IN SAME POSITION, CHECK FOR CONTINUITY BETWEEN CABLE RECEPTACLE PINS J AND K. IS CONTINUITY PRESENT?
YES
NO
DISCONNECT CABLE FROM WINCH GRIP. CHECK FOR CONTINUITY BETWEEN ENDS OF CABLE. IS CONTINUITY PRESENT BETWEEN PIN K TO PIN K?
YES
NO
REPLACE CABLE

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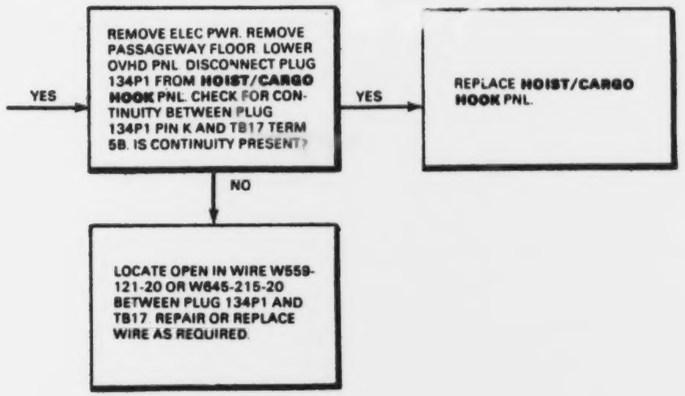
14-1.9 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH CONTROL GRIP AT STA 95 AUXILIARY PANEL (Continued)


YES
REMOVE ELEC PWR. REMOVE PASSAGEWAY FLOOR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P1 PIN K AND TB17 TERM 5B. IS CONTINUITY PRESENT?
YES
REPLACE HOIST/CARGO HOOK PNL.
NO
LOCATE OPEN IN WIRE W559-121-20 OR W645-215-20 BETWEEN PLUG 134P1 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.

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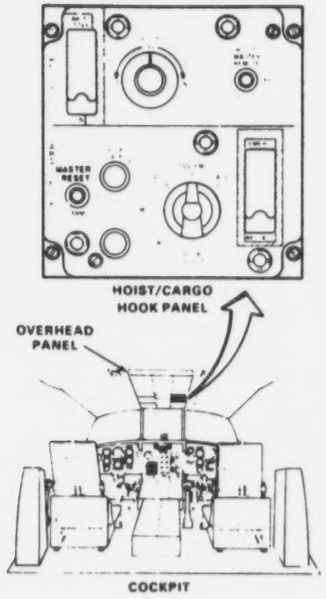
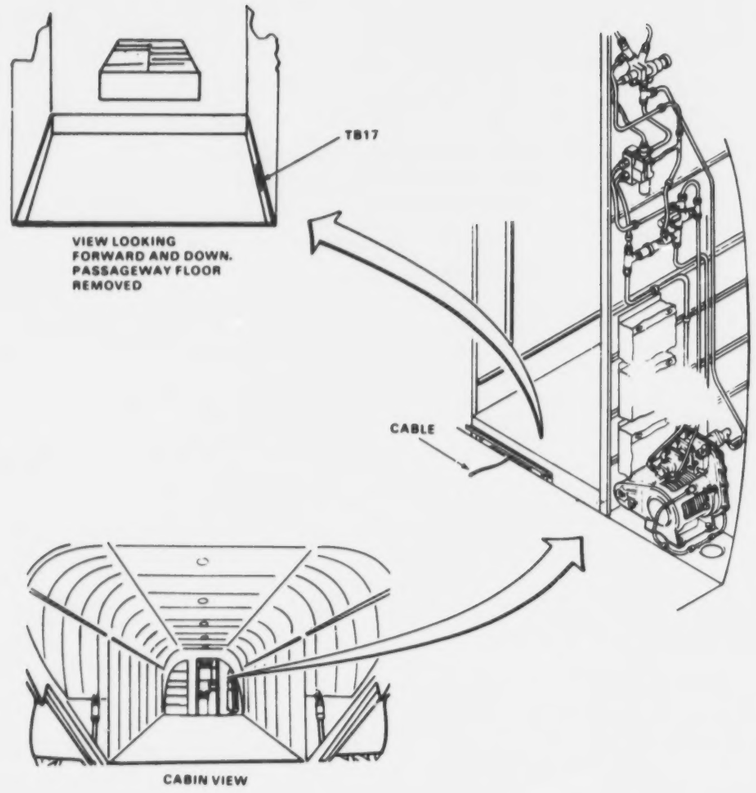
14-1.9 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH CONTROL GRIP AT STA 95 AUXILIARY PANEL (Continued)





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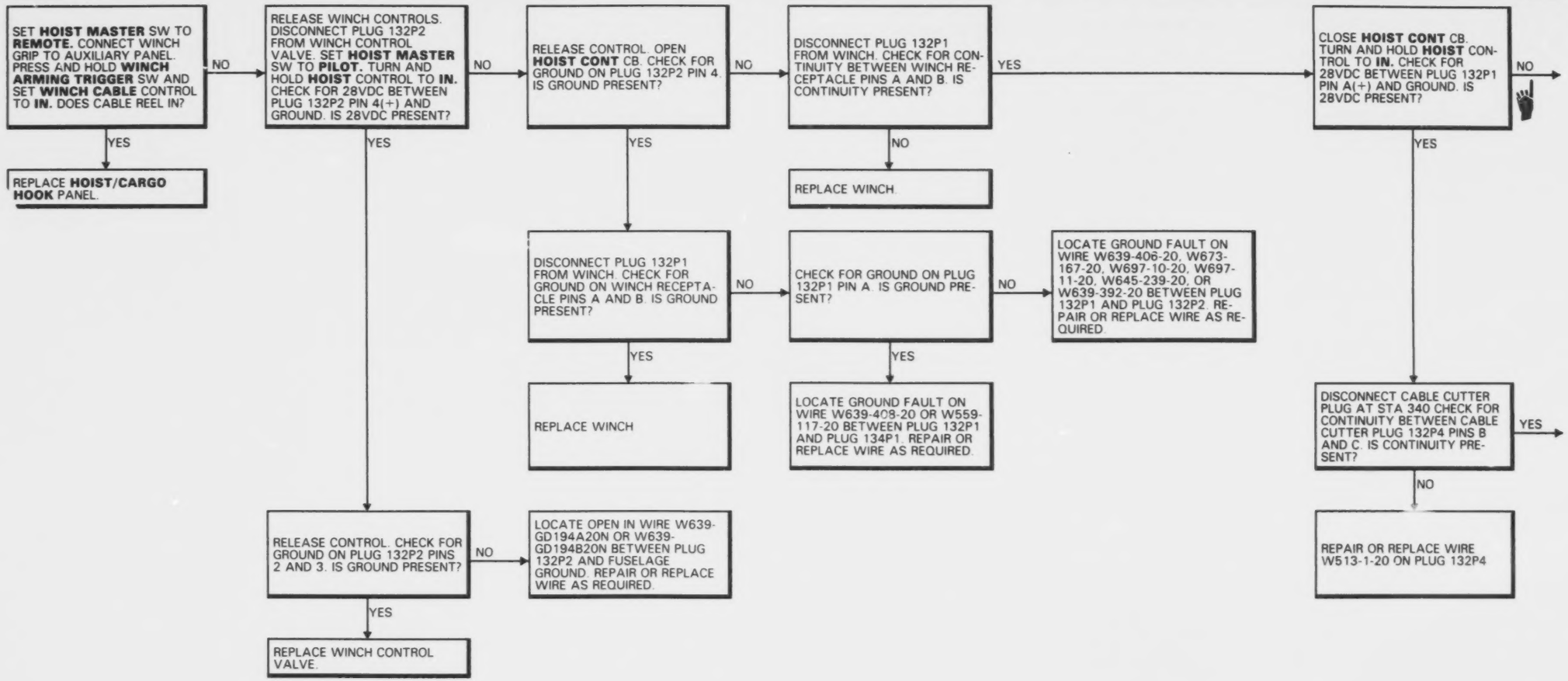
END OF TASK


SET **HOIST MASTER** SW TO **REMOTE.** CONNECT WINCH GRIP TO AUXILIARY PANEL. PRESS AND HOLD **WINCH ARMING TRIGGER** SW AND SET **WINCH CABLE** CONTROL TO **IN.** DOES CABLE REEL IN?
NO
YES
REPLACE **HOIST/CARGO HOOK** PANEL.
RELEASE WINCH CONTROLS. DISCONNECT PLUG 132P2 FROM WINCH CONTROL VALVE. SET **HOIST MASTER** SW TO **PILOT.** TURN AND HOLD **HOIST** CONTROL TO **IN.** CHECK FOR 28VDC BETWEEN PLUG 132P2 PIN 4(+) AND GROUND. IS 28VDC PRESENT?
NO
YES
RELEASE CONTROL. OPEN **HOIST CONT** CB. CHECK FOR GROUND ON PLUG 132P2 PIN 4. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG 132P1 FROM WINCH. CHECK FOR CONTINUITY BETWEEN WINCH RECEPTACLE PINS A AND B. IS CONTINUITY PRESENT?
YES
NO
REPLACE WINCH.
DISCONNECT PLUG 132P1 FROM WINCH. CHECK FOR GROUND ON WINCH RECEPTACLE PINS A AND B. IS GROUND PRESENT?
NO
YES
REPLACE WINCH
CHECK FOR GROUND ON PLUG 132P1 PIN A. IS GROUND PRESENT?
NO
YES
LOCATE GROUND FAULT ON WIRE W639-409-20 OR W559-117-20 BETWEEN PLUG 132P1 AND PLUG 134P1. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W639-406-20, W673-167-20, W697-10-20, W697-11-20, W645-239-20, OR W639-392-20 BETWEEN PLUG 132P1 AND PLUG 132P2. REPAIR OR REPLACE WIRE AS REQUIRED.
RELEASE CONTROL. CHECK FOR GROUND ON PLUG 132P2 PINS 2 AND 3. IS GROUND PRESENT?
NO
YES
LOCATE OPEN IN WIRE W639-GD194A20N OR W639-GD194B20N BETWEEN PLUG 132P2 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE WINCH CONTROL VALVE.
CLOSE **HOIST CONT** CB. TURN AND HOLD **HOIST** CONTROL TO **IN.** CHECK FOR 28VDC BETWEEN PLUG 132P1 PIN A(+) AND GROUND. IS 28VDC PRESENT?
NO
YES
DISCONNECT CABLE CUTTER PLUG AT STA 340 CHECK FOR CONTINUITY BETWEEN CABLE CUTTER PLUG 132P4 PINS B AND C. IS CONTINUITY PRESENT?
YES
NO
REPAIR OR REPLACE WIRE W513-1-20 ON PLUG 132P4

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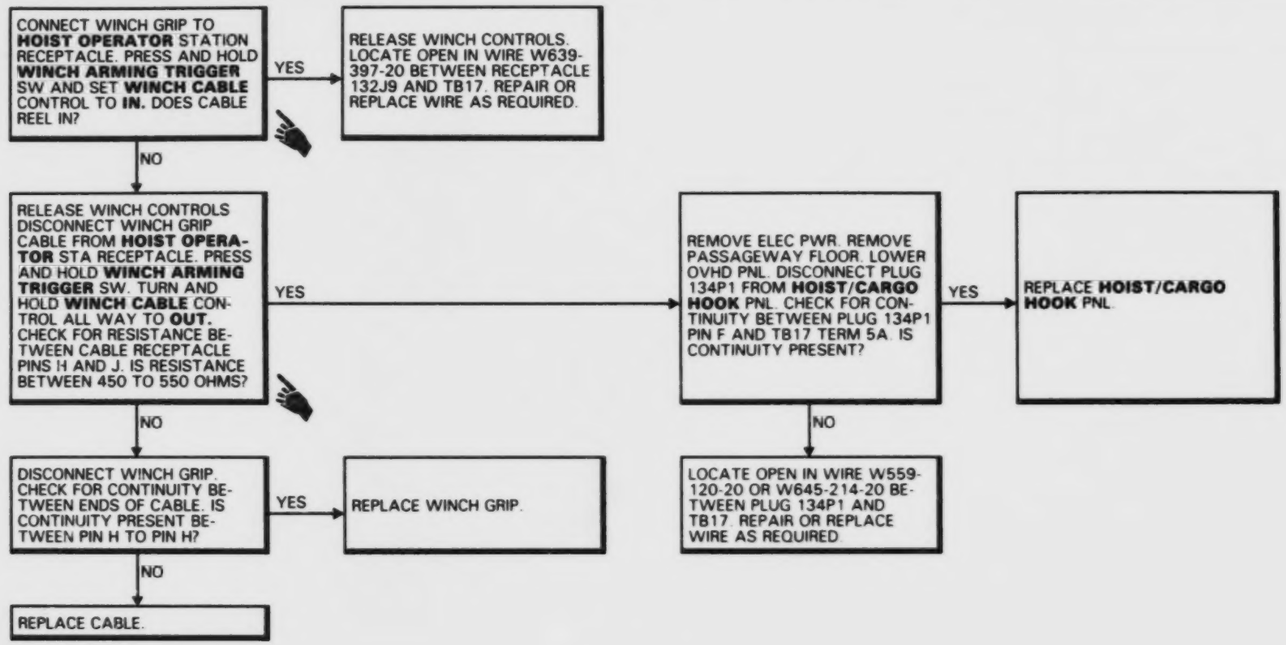

CONNECT WINCH GRIP TO **HOIST OPERATOR** STATION RECEPTACLE. PRESS AND HOLD **WINCH ARMING TRIGGER** SW AND SET **WINCH CABLE** CONTROL TO **IN.** DOES CABLE REEL IN?
YES
RELEASE WINCH CONTROLS. LOCATE OPEN IN WIRE W639-397-20 BETWEEN RECEPTACLE 132J9 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
RELEASE WINCH CONTROLS DISCONNECT WINCH GRIP CABLE FROM **HOIST OPERATOR** STA RECEPTACLE. PRESS AND HOLD **WINCH ARMING TRIGGER** SW. TURN AND HOLD **WINCH CABLE** CONTROL ALL WAY TO **OUT.** CHECK FOR RESISTANCE BETWEEN CABLE RECEPTACLE PINS H AND J. IS RESISTANCE BETWEEN 450 TO 550 OHMS?
YES
REMOVE ELEC PWR. REMOVE PASSAGEWAY FLOOR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM **HOIST/CARGO HOOK** PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P1 PIN F AND TB17 TERM 5A. IS CONTINUITY PRESENT?
YES
REPLACE **HOIST/CARGO HOOK** PNL.
NO
LOCATE OPEN IN WIRE W559-120-20 OR W645-214-20 BETWEEN PLUG 134P1 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
NO
DISCONNECT WINCH GRIP. CHECK FOR CONTINUITY BETWEEN ENDS OF CABLE. IS CONTINUITY PRESENT BETWEEN PIN H TO PIN H?
YES
REPLACE WINCH GRIP.
NO
REPLACE CABLE.

END OF TASK

14-1.11 CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED BY WINCH GRIP AT STA 502 RECEPTACLE

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

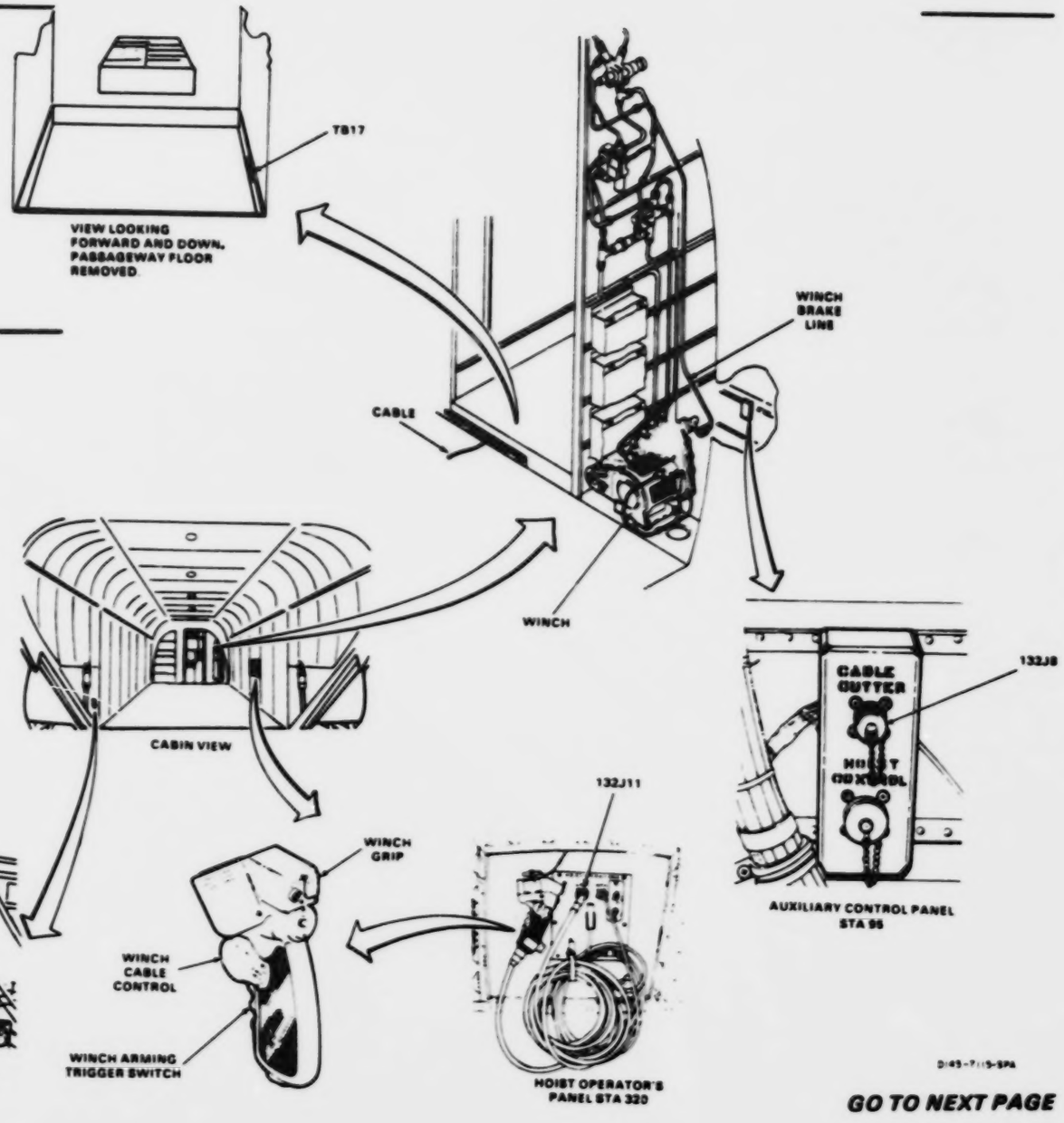
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On



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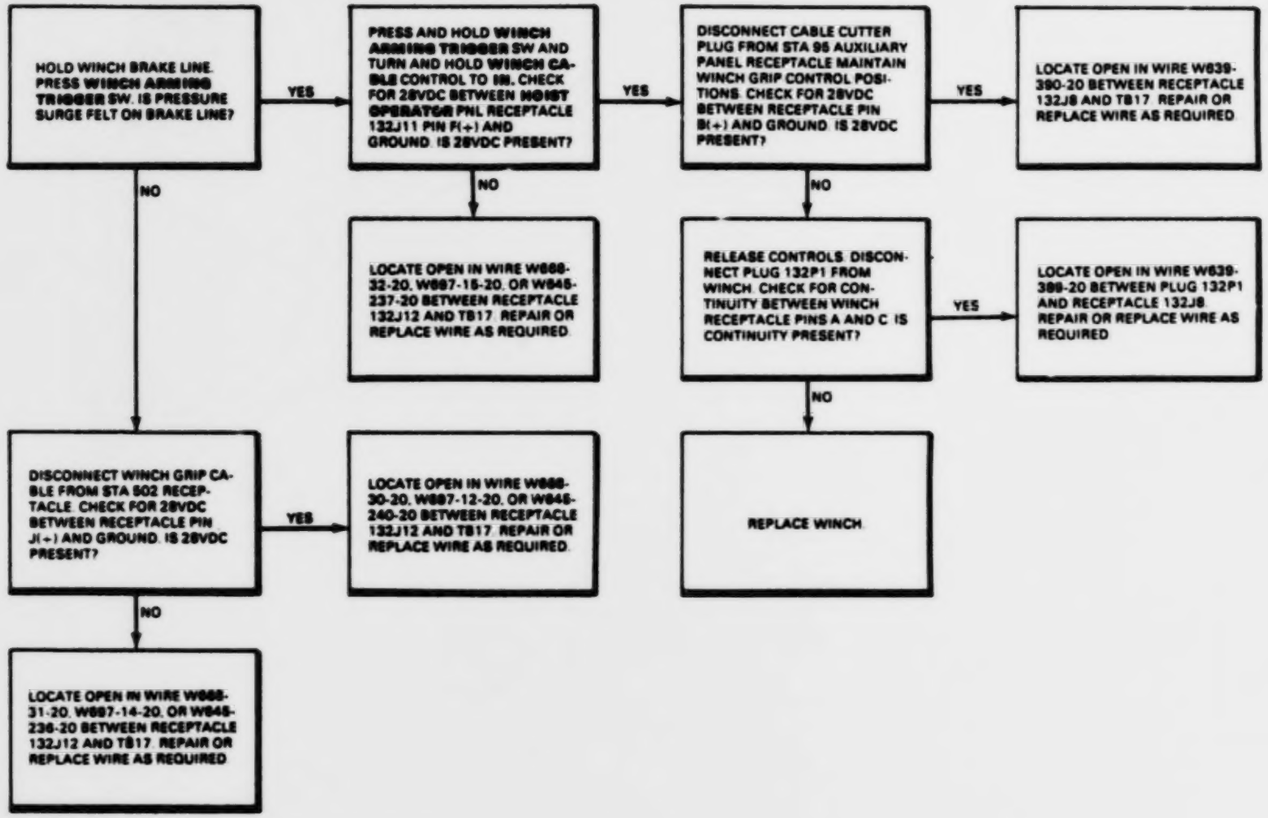
14-1.11 CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED BY WINCH GRIP AT STA 502 RECEPTACLE (Continued)


HOLD WINCH BRAKE LINE. PRESS WINCH ARMING TRIGGER SW. IS PRESSURE SURGE FELT ON BRAKE LINE?
YES
PRESS AND HOLD WINCH ARMING TRIGGER SW AND TURN AND HOLD WINCH CABLE CONTROL TO IN. CHECK FOR 28VDC BETWEEN HOIST OPERATOR PNL RECEPTACLE 132J11 PIN F(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT CABLE CUTTER PLUG FROM STA 95 AUXILIARY PANEL RECEPTACLE MAINTAIN WINCH GRIP CONTROL POSITIONS. CHECK FOR 28VDC BETWEEN RECEPTACLE PIN B(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W639-390-20 BETWEEN RECEPTACLE 132J8 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W688-32-20, W697-15-20, OR W645-237-20 BETWEEN RECEPTACLE 132J12 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
NO
RELEASE CONTROLS. DISCONNECT PLUG 132P1 FROM WINCH. CHECK FOR CONTINUITY BETWEEN WINCH RECEPTACLE PINS A AND C. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W639-389-20 BETWEEN PLUG 132P1 AND RECEPTACLE 132J8. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE WINCH
NO
DISCONNECT WINCH GRIP CABLE FROM STA 502 RECEPTACLE. CHECK FOR 28VDC BETWEEN RECEPTACLE PIN J(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W688-30-20, W697-12-20, OR W645-240-20 BETWEEN RECEPTACLE 132J12 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W688-31-20, W697-14-20, OR W645-236-20 BETWEEN RECEPTACLE 132J12 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

14-1.12 CABLE DOES NOT REEL OUT WHEN WINCH IS CONTROLLED BY WINCH GRIP AT HOIST OPERATOR STATION

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

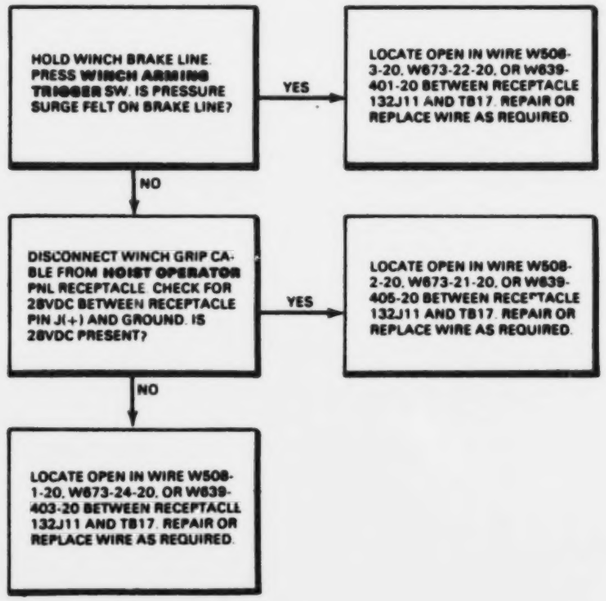
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

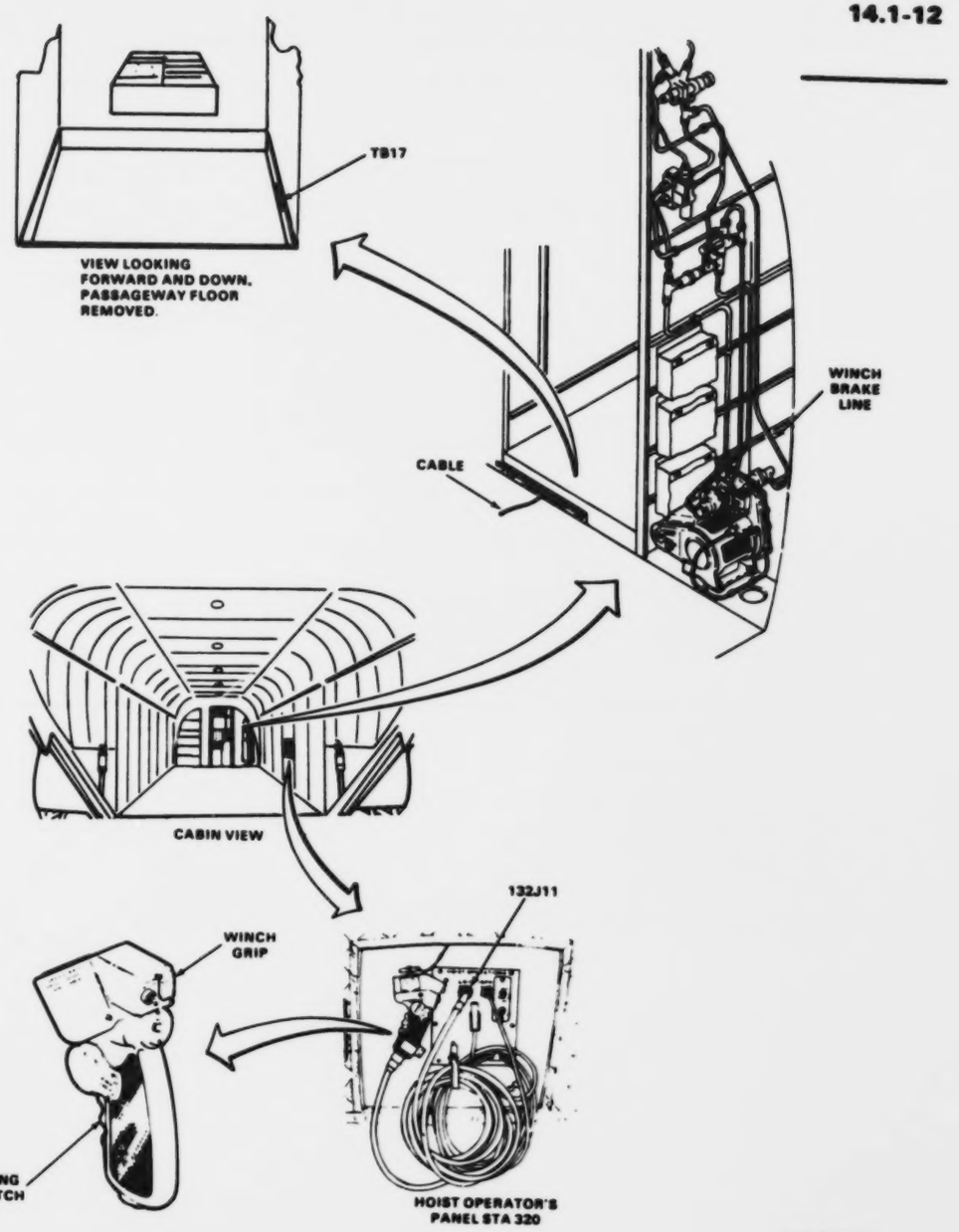
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On


HOLD WINCH BRAKE LINE. PRESS WINCH ARMING TRIGGER SW. IS PRESSURE SURGE FELT ON BRAKE LINE?
YES
LOCATE OPEN IN WIRE W508-3-20, W673-22-20, OR W639-401-20 BETWEEN RECEPTACLE 132J11 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT WINCH GRIP CABLE FROM HOIST OPERATOR PNL RECEPTACLE. CHECK FOR 28VDC BETWEEN RECEPTACLE PIN J(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W508-2-20, W673-21-20, OR W639-405-20 BETWEEN RECEPTACLE 132J11 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W508-1-20, W673-24-20, OR W639-403-20 BETWEEN RECEPTACLE 132J11 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED.



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END OF TASK

14-1.13 28VDC NOT MEASURED AT STA 340 CABLE CUTTER RECEPTACLE WHEN HOIST/CARGO HOOK PANEL CABLE CUTTER SWITCH SET TO ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

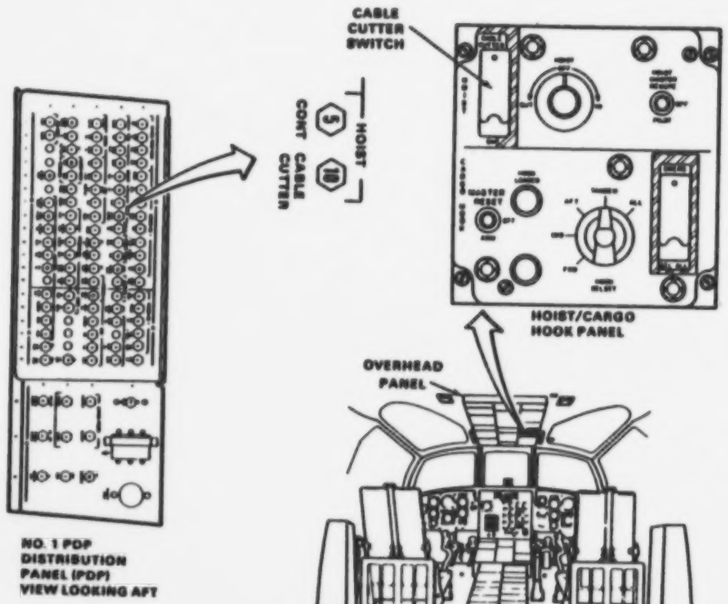
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

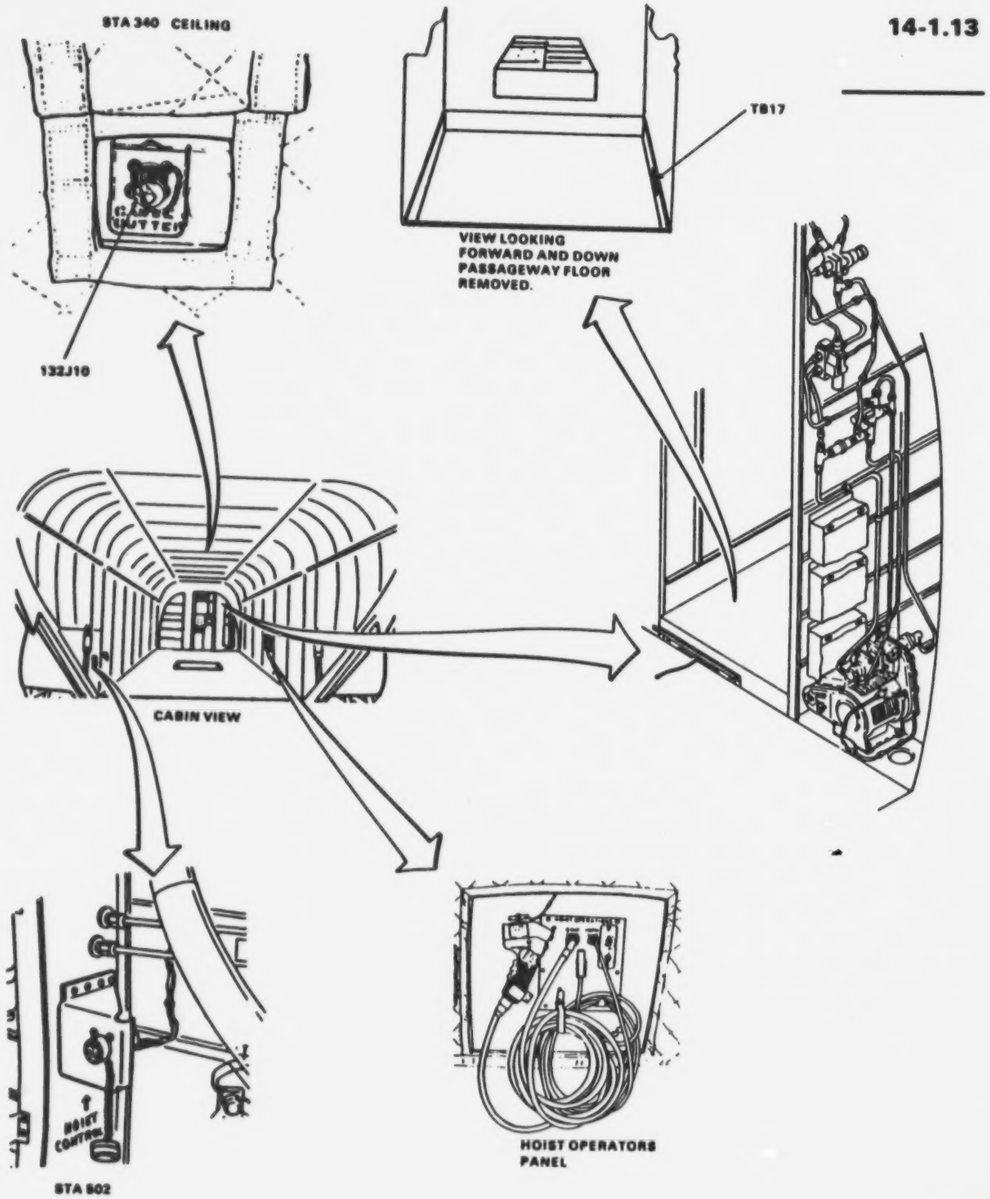
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On





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14-1.10 CABLE DOES NOT REEL IN WHEN WINCH IS CONTROLLED BY WINCH GRIP AT STA 95 AUXILIARY PANEL

FAULT ISOLATION PROCEDURE

AL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter
Asbestos Gloves (E187)

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

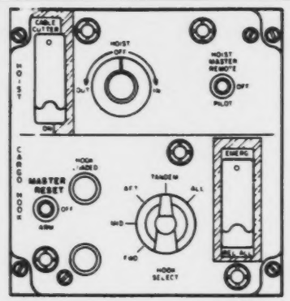
General Safety Instructions:

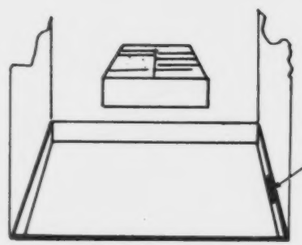
WARNING

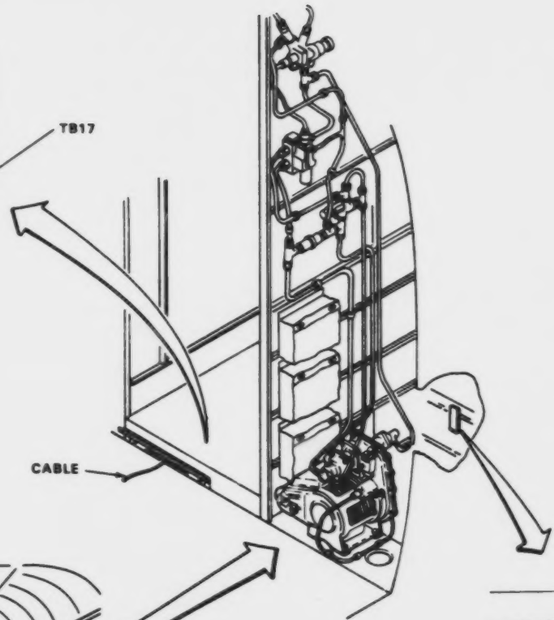
Wear gloves when handling wire rope (cable). Otherwise injury to hands can result.

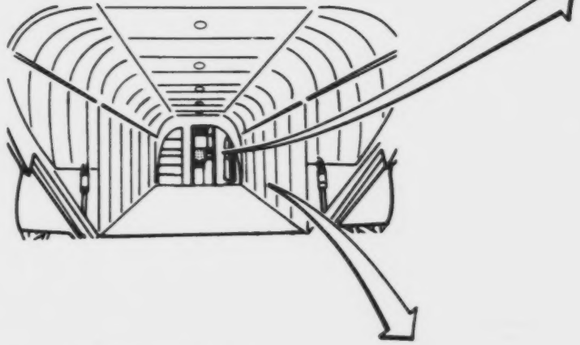
NOTE

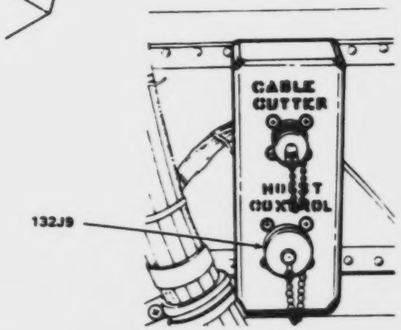
Have helper keep tension on wire rope (cable) when reeling cable. Cable will reel evenly and will not snarl. Helper must wear gloves.

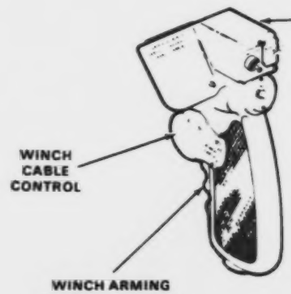


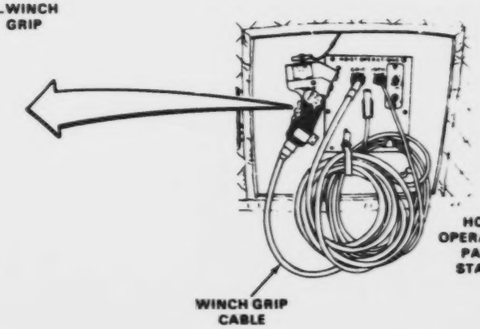












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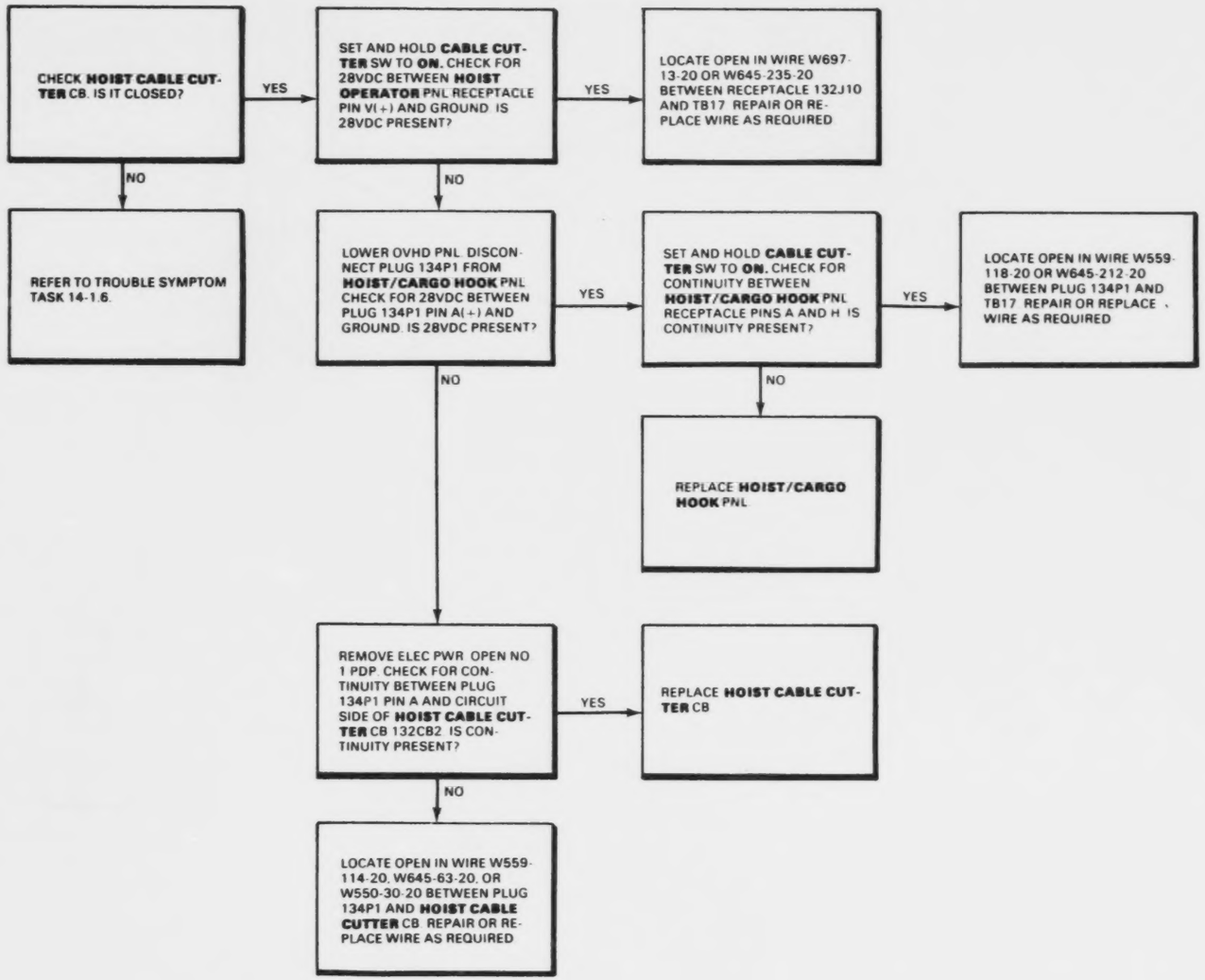
14-1.13 28VDC NOT MEASURED AT STA 340 CABLE CUTTER RECEPTACLE WHEN HOIST/CARGO HOOK PANEL CABLE CUTTER SWITCH SET TO ON (Continued)


CHECK HOIST CABLE CUTTER CB. IS IT CLOSED?
YES
SET AND HOLD CABLE CUTTER SW TO ON. CHECK FOR 28VDC BETWEEN HOIST OPERATOR PNL RECEPTACLE PIN V(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W697-13-20 OR W645-235-20 BETWEEN RECEPTACLE 132J10 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REFER TO TROUBLE SYMPTOM TASK 14-1.6.
NO
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR 28VDC BETWEEN PLUG 134P1 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
SET AND HOLD CABLE CUTTER SW TO ON. CHECK FOR CONTINUITY BETWEEN HOIST/CARGO HOOK PNL RECEPTACLE PINS A AND H. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-118-20 OR W645-212-20 BETWEEN PLUG 134P1 AND TB17. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE HOIST/CARGO HOOK PNL
NO
REMOVE ELEC PWR. OPEN NO 1 PDP. CHECK FOR CONTINUITY BETWEEN PLUG 134P1 PIN A AND CIRCUIT SIDE OF HOIST CABLE CUTTER CB 132CB2. IS CONTINUITY PRESENT?
YES
REPLACE HOIST CABLE CUTTER CB
NO
LOCATE OPEN IN WIRE W559-114-20, W645-63-20, OR W550-30-20 BETWEEN PLUG 134P1 AND HOIST CABLE CUTTER CB. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

14-1.14 28VDC NOT MEASURED AT STA 340 CABBLE CUTTER RECEPTACLE WHEN WINCH GRIP CABLE CUTTER SWITCH PRESSED AT HOIST OPERATOR OR AUXILIARY PANEL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

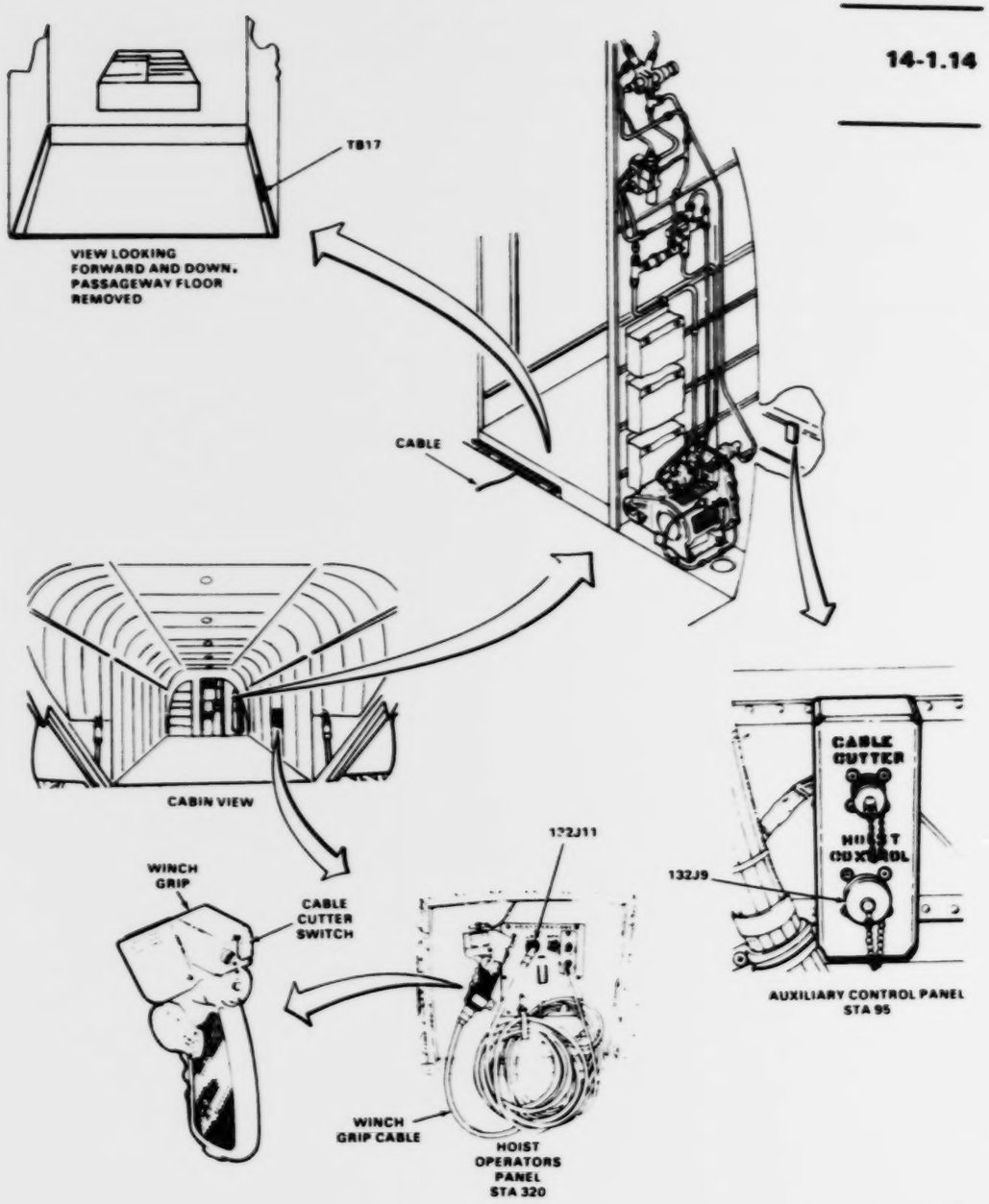
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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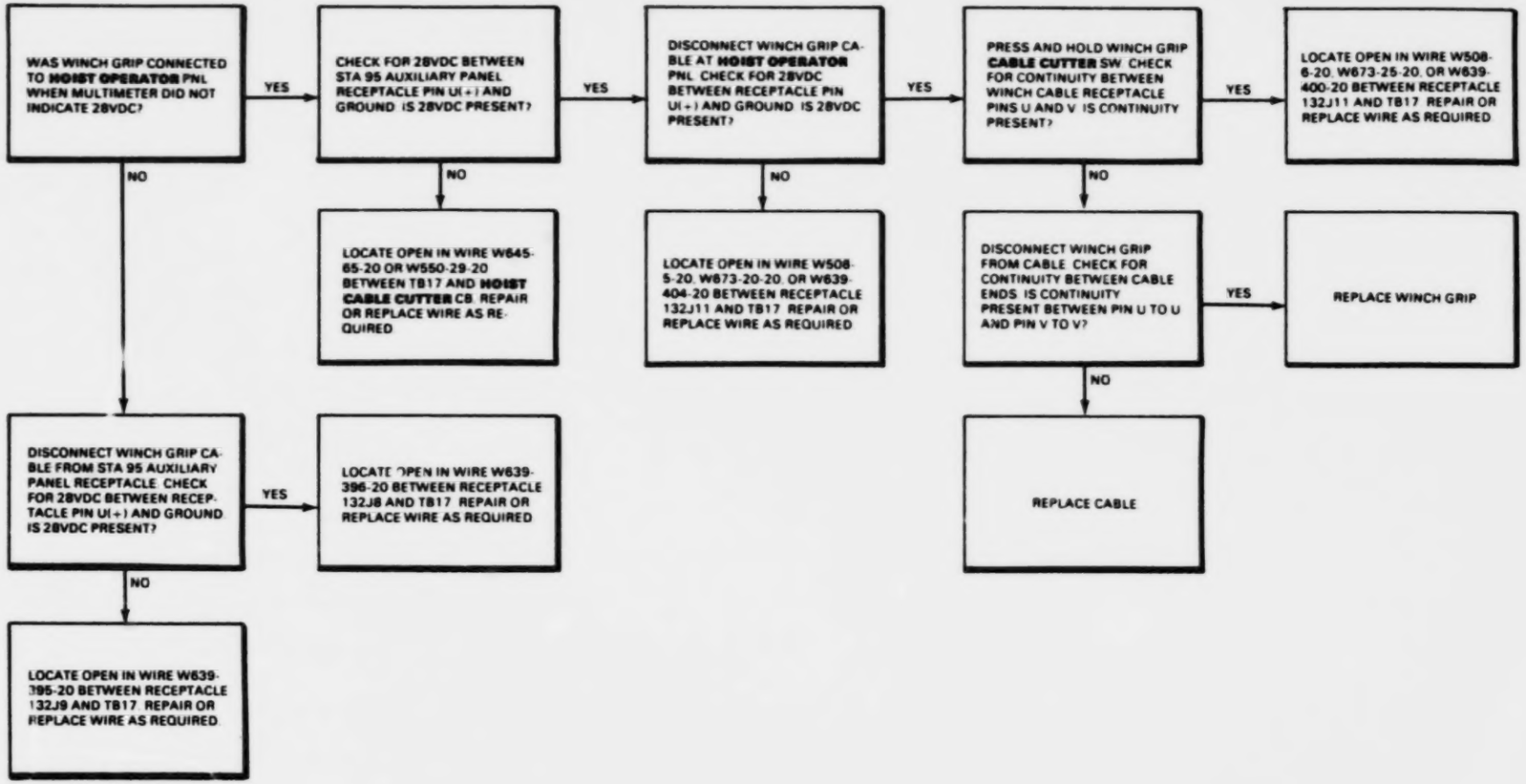
14-1.14 28VDC NOT MEASURED AT STA 340 CABLE CUTTER RECEPTACLE WHEN WINCH GRIP CABLE CUTTER SWITCH PRESSED AT HOIST OPERATOR OR AUXILIARY PANEL (Continued)


WAS WINCH GRIP CONNECTED TO HOIST OPERATOR PNL WHEN MULTIMETER DID NOT INDICATE 28VDC?
YES
CHECK FOR 28VDC BETWEEN STA 95 AUXILIARY PANEL RECEPTACLE PIN U(+) AND GROUND IS 28VDC PRESENT?
YES
DISCONNECT WINCH GRIP CABLE AT HOIST OPERATOR PNL CHECK FOR 28VDC BETWEEN RECEPTACLE PIN U(+) AND GROUND IS 28VDC PRESENT?
YES
PRESS AND HOLD WINCH GRIP CABLE CUTTER SW CHECK FOR CONTINUITY BETWEEN WINCH CABLE RECEPTACLE PINS U AND V IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W508-6-20, W673-25-20, OR W639-400-20 BETWEEN RECEPTACLE 132J11 AND TB17 REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W645-65-20 OR W550-29-20 BETWEEN TB17 AND HOIST CABLE CUTTER CB REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W508-5-20, W673-20-20, OR W639-404-20 BETWEEN RECEPTACLE 132J11 AND TB17 REPAIR OR REPLACE WIRE AS REQUIRED
NO
DISCONNECT WINCH GRIP FROM CABLE CHECK FOR CONTINUITY BETWEEN CABLE ENDS IS CONTINUITY PRESENT BETWEEN PIN U TO U AND PIN V TO V?
YES
REPLACE WINCH GRIP
NO
REPLACE CABLE
NO
DISCONNECT WINCH GRIP CABLE FROM STA 95 AUXILIARY PANEL RECEPTACLE CHECK FOR 28VDC BETWEEN RECEPTACLE PIN U(+) AND GROUND IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W639-396-20 BETWEEN RECEPTACLE 132J8 AND TB17 REPAIR OR REPLACE WIRE AS REQUIRED
NO
LOCATE OPEN IN WIRE W639-395-20 BETWEEN RECEPTACLE 132J9 AND TB17 REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

CHAPTER 15

AUXILIARY POWER UNIT TROUBLESHOOTING

CHAPTER 15
AUXILIARY POWER UNIT SYSTEM TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 15 contains procedures for Auxiliary Power Unit System troubleshooting. Each system and failure symptom is listed below. Included in this chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for the Auxiliary Power Unit System.

Refer to TM 55-1520-240-23 for required maintenance procedures.

SYSTEM	PARA
AUXILIARY POWER UNIT	15-1

FAILURE SYMPTOM LIST

AUXILIARY POWER UNIT

SYMPTOM	TASK
APU CONT NORM OR APU CONT EMERG CIRCUIT BREAKER DOES NOT STAY CLOSED	15-1.4
APU DOES NOT MOTOR WHEN APU SWITCH IS SET TO START (WITHOUT 33)	15-1.4
APU DOES NOT MOTOR WHEN APU SWITCH IS SET TO START (WITH 33)	15-1.4
APU HAS HOT START	15-1.4
APU MOTORS BUT DOES NOT START, ESU BITE INDICATES o●oo	15-1.4
APU MOTORS BUT DOES NOT START, ESU BITE INDICATES o●●● OR oo●● THEN ●oo●	15-1.4
APU MOTORS BUT DOES NOT START; ESU BITE INDICATES ooo● THEN ●oo●	15-1.4
APU ON CAPSULE GOES OUT (APU SHUTS DOWN) WHEN APU CONT CIRCUIT BREAKER OPENED	15-1.4
APU ON CAPSULE OUT WHEN APU OPERATING NORMALLY	15-1.4
APU SHUTS DOWN DURING START, ESU BITE INDICATES ●●oo	15-1.4
APU SHUTS DOWN WHEN APU GEN SWITCH IS SET TO OFF	15-1.4
APU STARTS AND RUNS BUT ESU BITE INDICATES ●o●o	15-1.4
APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES oo●●	15-1.4
APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ●●o●	15-1.4
APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES o●o●	15-1.4
ESU BITE INDICATORS ARE NOT BLACK OR APU FUEL BOOST PUMP CANNOT BE HEARD OPERATING BEFORE APU SWITCH SET TO START	15-1.4

AUXILIARY POWER UNIT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

16

PLUG

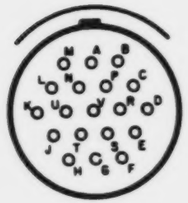
16

RECEPTACLE

30

PLUG

30



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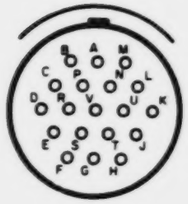

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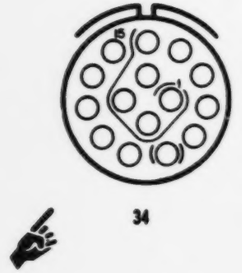

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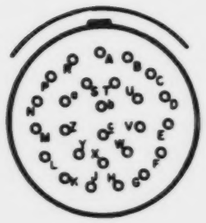

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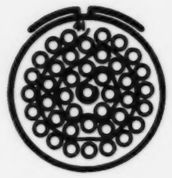
AUXILIARY POWER UNIT ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE



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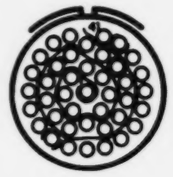
PLUG



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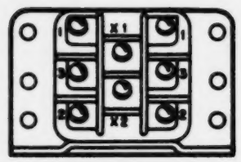
RELAY



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GND STUD

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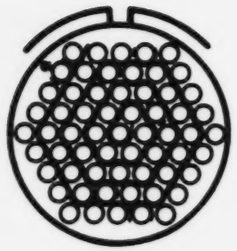

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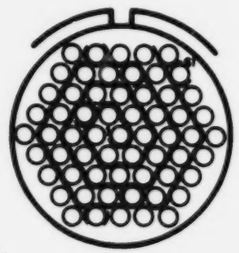

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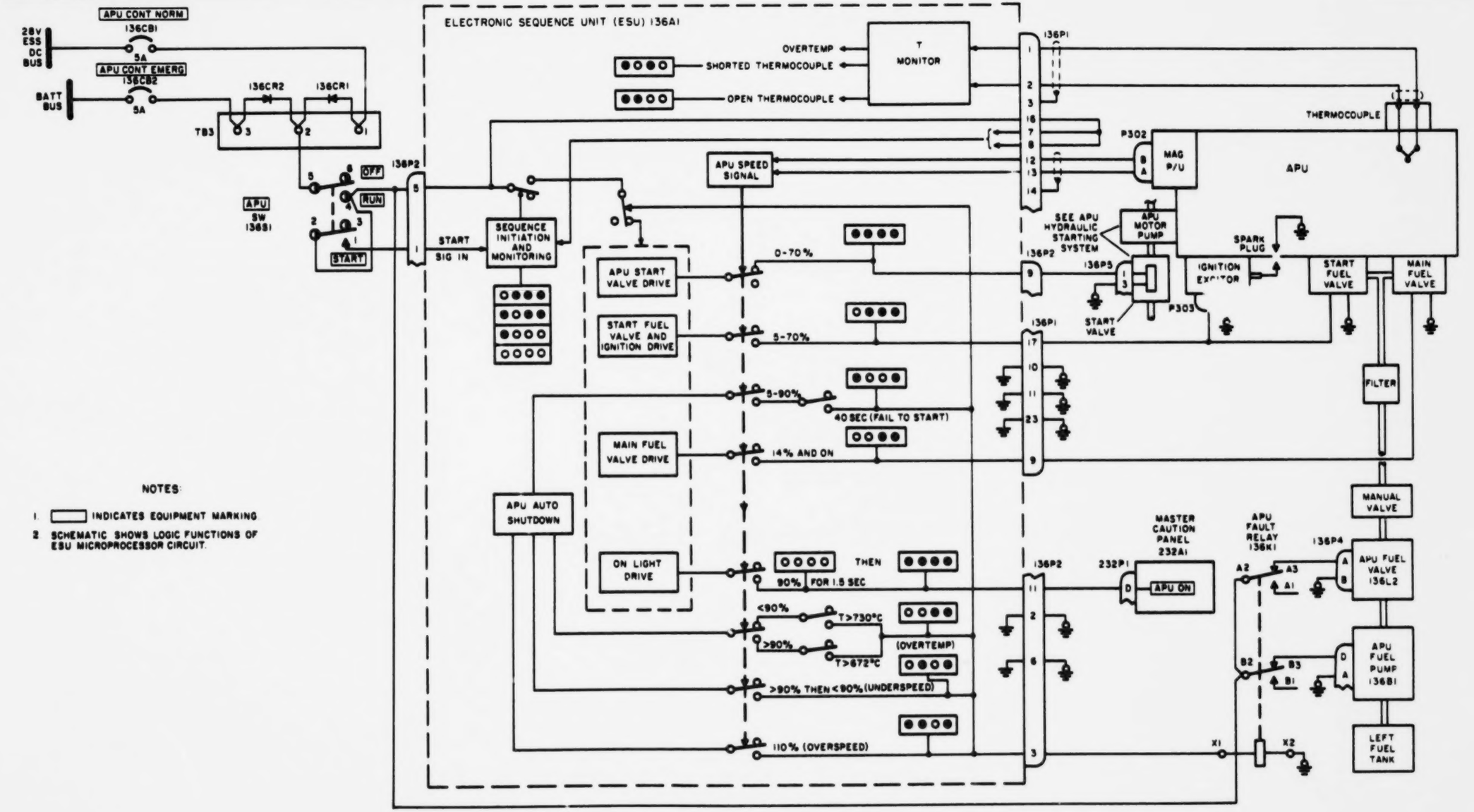
15-1 APU

15-1 APU

15-1.1 APU SCHEMATIC



NOTES:

1. ▭ INDICATES EQUIPMENT MARKING
2. SCHEMATIC SHOWS LOGIC FUNCTIONS OF ESU MICROPROCESSOR CIRCUIT.

D145-5900-SP4

CHAPTER 15

AUXILIARY POWER UNIT SYSTEM TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 15 contains all procedures for the Auxiliary Power Unit Troubleshooting including the interface to the Main Engine Starter. The Auxiliary Power Unit failure symptoms are listed in Table No. 15-1. Included in this chapter are locations and views of all electrical connectors, receptacles, relays and ground connections for the Auxiliary Power Unit and the interface control systems of the Airframe. Refer to TM 55-1520-240-23 for required maintenance procedures.

DIAGRAMS AND ILLUSTRATIONS

Included in this chapter are block diagrams, illustrations, maintenance tables, schematic diagrams, wiring diagrams, piping diagrams and troubleshooting logic trees which are necessary to troubleshoot the APU system components including the interface to the Main Engine Starter components. All APU systems troubleshooting instructions are contained in this chapter and are listed in the seven (7) groups described in the order listed below. The application of the APU Field Tester is described in paragraph 15-7.

APU SYSTEMS MAJOR TITLES	PARA.
APU TO AIRFRAME INTERFACE	15-1
APU ELECTRICAL SYSTEM	15-2
APU FUEL SYSTEM	15-3
APU HYDRAULIC SYSTEM	15-4
APU / ENGINE HYDRAULIC STARTER	15-5
APU MICROPROCESSOR ELECTRONIC SEQUENCE UNIT (ESU)	15-6
APU TESTER	15-7

VISUAL CHECKS	PARA.
APU VISUAL	15-1.4
APU HYDRAULIC	15-4.7
ENGINE HYDRAULIC	15-5.4

OPERATIONAL CHECKS	PARA.
APU NORMAL OPERATION	15-1.5
APU - HYDRAULIC STARTING	15-4.8
ENGINE - HYDRAULIC STARTING	15-5.5
APU TESTER OPERATION	15-7.3

TABLE 15-1 APU COMPOSITE FAILURE SYMPTOM LIST

ITEM NO.	SYMPTOM	APPLICABLE SYSTEM	TASK
1	**APU DOES NOT MOTOR**		
	APU DOES NOT MOTOR	ELECTRICAL	15-2.10
	APU DOES NOT MOTOR, ESU BITE INDICATES ○●●●	ELECTRICAL	15-2.10
	APU DOES NOT MOTOR, ESU BITE INDICATES ●○●●	ELECTRICAL	15-2.10
	APU DOES NOT MOTOR, ESU BITE INDICATES ●○○○	ELECTRICAL	15-2.10
	APU DOES NOT MOTOR, ESU BITE INDICATES ○○○○	ELECTRICAL	15-2.10
	APU DOES NOT MOTOR	HYDRAULIC	15-4.10

TABLE 15-1 APU COMPOSITE FAILURE SYMPTOM LIST (Continued)

ITEM NO.	SYMPTOM	APPLICABLE SYSTEM	TASK
2	**APU MOTORS BUT DOES NOT START**		
	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○○●● THEN ●○○●	FUEL - (APU)	15-3.6
	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○○○● THEN ●○○●	FUEL - (APU)	15-3.7
	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○●●● OR ○○●● THEN ●○○●	HYDRAULIC	15-4.11
	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○●○○	ELECTRONIC	15-6.11
	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○●●● OR ○○●● THEN ●○○●	ELECTRONIC	15-6.12
	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○○○● THEN ●○○●	ELECTRONIC	15-6.13

TABLE 15-1 APU COMPOSITE FAILURE SYMPTOM LIST (Continued)

ITEM NO.	SYMPTOM	APPLICABLE SYSTEM	TASK
3	**APU STARTS BUT SHUTS DOWN**		
	APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○○○○ THEN ●●○●	ELECTRONIC	15-6.14
	APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○○○● THEN ○●○●	ELECTRONIC	15-6.15
	APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○○○● THEN ○○●●	ELECTRONIC	15-6.16
	APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○○●● THEN ●●○○	ELECTRONIC	15-6.18
4	**APU STARTS AND RUNS**		
	APU STARTS AND RUNS THEN SHUTS DOWN, ESU BITE INDICATES ○○○○ THEN ○○●●	ELECTRONIC	15-6.17
	APU STARTS AND RUNS BUT ESU BITE INDICATES ●○●○	ELECTRONIC	15-6.19
5	**APU SHUTS DOWN**		
	APU SHUTS DOWN WHEN GEN APU SWITCH PLACED TO **ON**. ESU BITE INDICATES ●●●●	ELECTRICAL	15-2.14
	APU SHUTS DOWN WHEN APU GEN SWITCH IS SET TO OFF	ELECTRICAL	15-2.15
6	**APU CIRCUIT BREAKERS**		
	APU **CONT NORM** OR APU **CONT EMERG** CIRCUIT BREAKER DOES NOT STAY CLOSED	ELECTRICAL	15-2.7
7	**ESU BITE INDICATORS**		
	ESU BITE INDICATORS DO NOT CYCLE AFTER APU SWITCH SET TO RUN	ELECTRICAL	15-2.8

TABLE 15-1 APU COMPOSITE FAILURE SYMPTOM LIST (Continued)

ITEM NO.	SYMPTOM	APPLICABLE SYSTEM	TASK
8	**APU FUEL BOOST PUMP**		
	APU FUEL BOOST PUMP CANNOT BE HEARD OPERATING BEFORE APU SWITCH SET TO **START**	ELECTRICAL	15-2.9
9	**APU ON CAPSULE GOES OUT**		
	APU ON CAPSULE GOES OUT (APU SHUTS DOWN) WHEN APU CONT CIRCUIT BREAKER OPENED	ELECTRICAL	15-2.11
	APU ON CAPSULE OUT WHEN APU OPERATING NORMALLY	ELECTRICAL	15-2.13
10	**APU DOES NOT STOP**		
	APU DOES NOT STOP, ESU INDICATORS ARE BLACK ●●●●	ELECTRICAL	15-2.12
11	**APU PUMP FAULT LIGHT**		
	APU PUMP FAULT LIGHT IS **ON**	HYDRAULIC	15-4.12
12	**NO. 1 OR NO. 2 ENGINE DOES NOT MOTOR**		
	NO. 1 OR NO. 2 ENGINE DOES NOT MOTOR (HYDRAULIC SYSTEM)	HYDRAULIC	15-5.6
13	**NO. 1 OR NO. 2 ENGINE KEEPS MOTORING**		
	NO. 1 OR NO. 2 ENGINE KEEPS MOTORING WHEN ENGINE START SWITCH SET TO OFF.	HYDRAULIC	15-5.7
14	**APU START ACCUMULATOR GAGE**		
	APU START ACCUMULATOR GAGE DOES NOT INDICATE AT LEAST 2850 PSI	HYDRAULIC	15-4.9

AUXILIARY POWER UNIT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

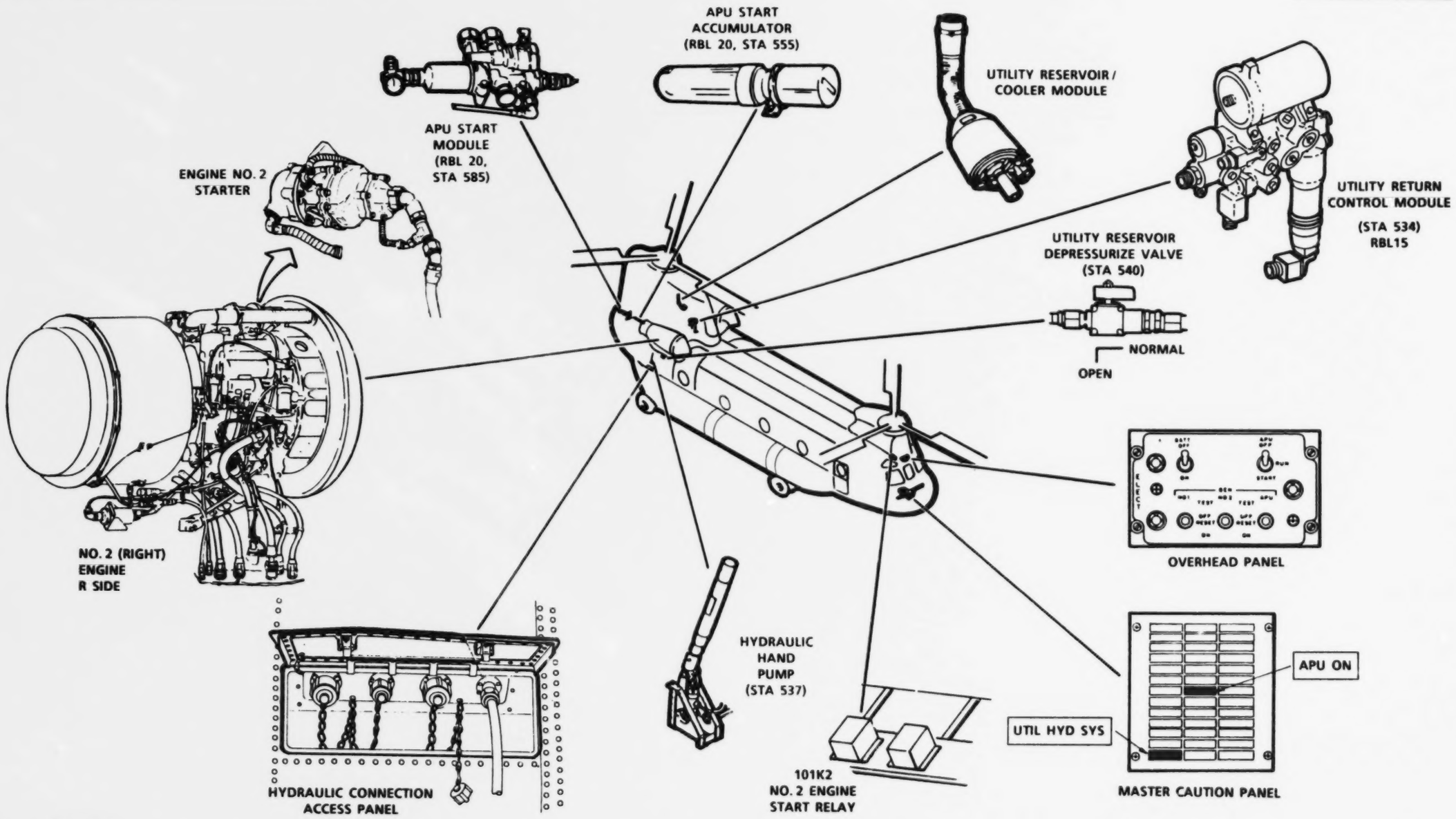
REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD128		151	LH AFT CABIN	360	32	50L
GD129		151	AFT AT APU AREA	594	60	20R
GD130		151	LH AFT TAIL	510	50	45L
GD153		151	LH AFT CABIN	380	-15	50L
TB-3			NO. 1 PDP	90	-15	30L
136K1	MS24149-D1	106	APU FAULT RELAY	360	32	50L
136P1	M83723-96A1624N	35	J1 OF ESU	520	40	50L
136P2	M83723-95A1415N	34	J2 OF ESU	520	40	50L
136J3	MS3474W12-3S	16	AIRCRAFT SKIN–TANK SIDE-CABLE TO APU FUEL PUMP–LH POD	380	-5	50L
136P4	MS3456W10SL-4S	46	APU FUEL WAVE–LH POD	375	-20	54R
136P5	M83723-95A1005N	30	APU HYD START VALVE	575	50	30R
136P6	M83723-95A1624N	35	APU	594	65	8L
174J5	MS3474W14-19S	21	AIRCRAFT SKIN–INSIDE	385	-5	50L
174P5	MS3476W14-19P	21	AIRCRAFT SKIN–TANK SIDE	385	-5	50L
232P1	MS3476W20-41S	24	CONSOLE–CTK INST PNL MASTER CAUTION PANEL			
300J1	M83723-74A2041N	40	NO. 1 PDP			
300P1	M83723-75A2041N	40	NO. 1 PDP			
300J19	M83723-73A2041N	40	OVERHEAD PANEL–COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL–COCKPIT			
300J21	M83723-74A2461N	43	OVERHEAD PANEL–COCKPIT			
300P21	M83723-75A2461N	43	OVERHEAD PANEL–COCKPIT			
300J50	M83723-73A2461N	43	ELECTRONICS COMPARTMENT–OVHD	120	40	20L
300P50	M83723-76A2461N	43	ELECTRONICS COMPARTMENT–OVHD	120	40	20L
300J54	M83723-74A2461N	43	AFT CROWN	460	50	20L
300P54	M83723-75A2461N	43	AFT CROWN	460	50	20L
300J61	M83723-73A24619	43	CONSOLE–UNDERFLOOR	85	-20	10L
300P61	M83723-76A24619	43	CONSOLE–UNDERFLOOR	85	-20	10L

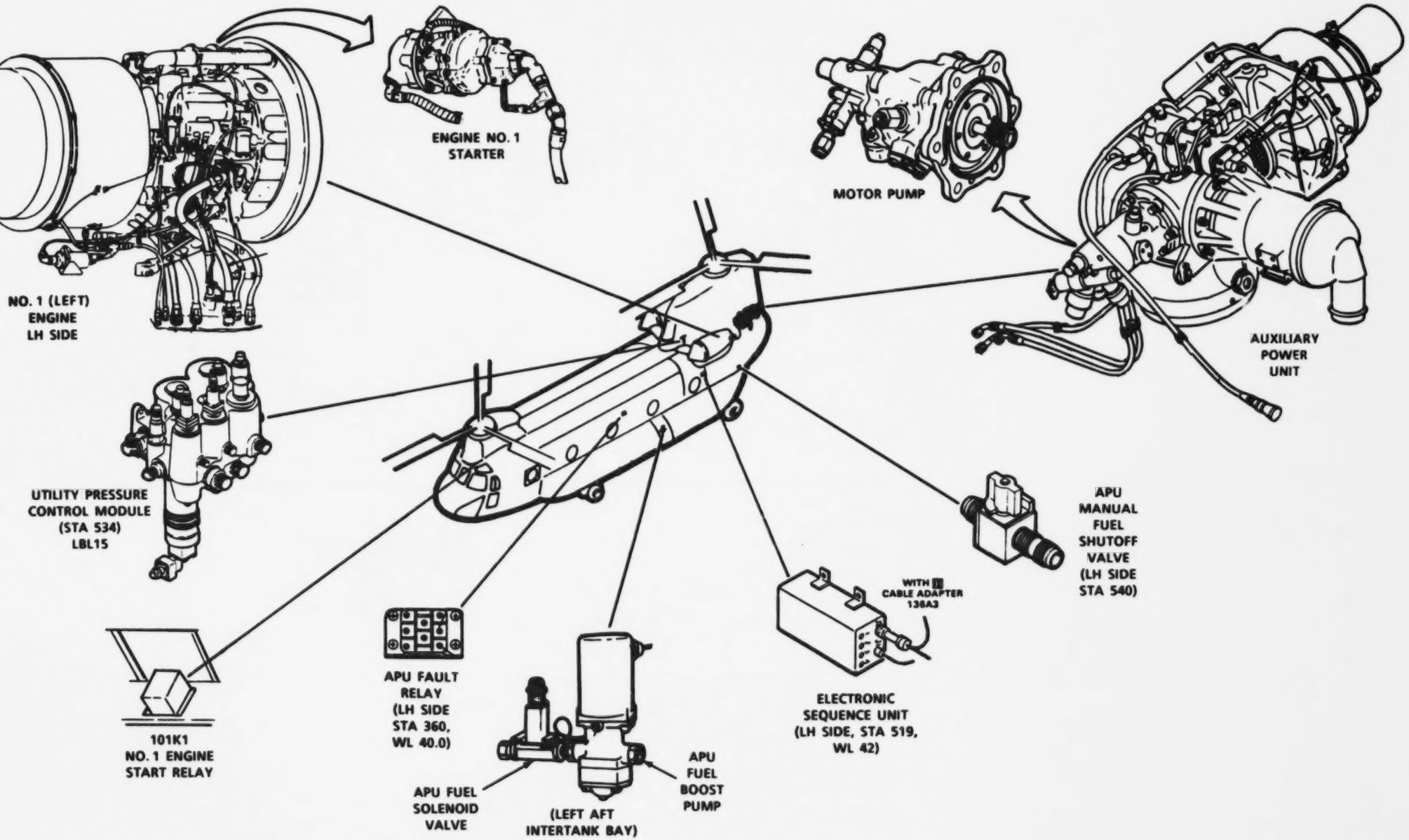
PARAGRAPH 15-1

TABLE OF CONTENTS

APU TO AIRFRAME INTERFACE TROUBLESHOOTING

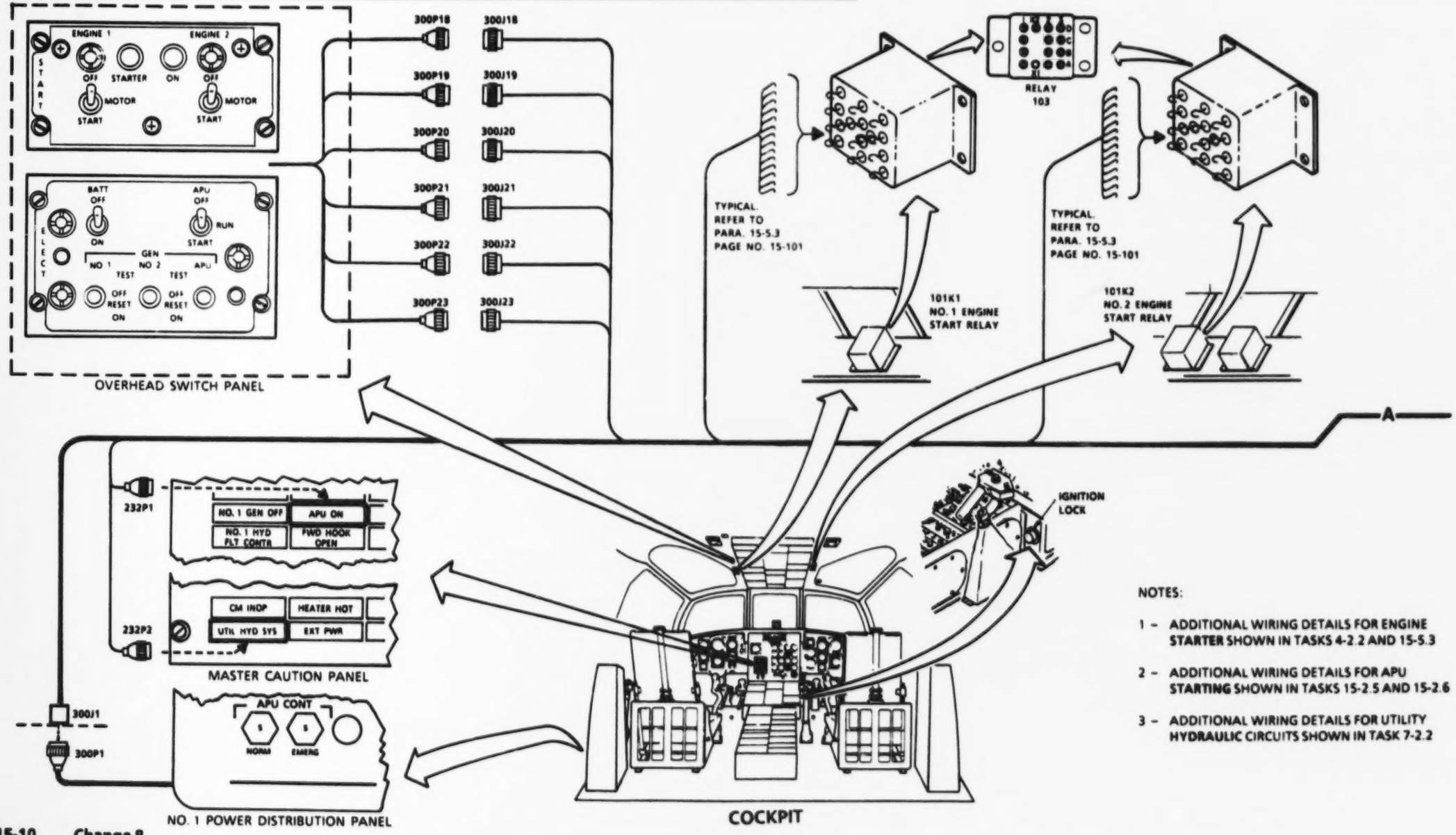
PARAGRAPH	DESCRIPTION	FUNCTION	PAGE
15-1	**APU TO AIRFRAME INTERFACE**		15-5
15-1.1	APU SYSTEM COMPONENTS	DRAWING	15-8
15-1.2	OVERALL ELECTRICAL CABLING INTER CONNECTIONS OF APU SYSTEM COMPONENTS, "INTERFACED" TO MAIN ENGINE "STARTER" COMPONENTS	DRAWING	15-10
15-1.3	OVERALL PIPING INTERRELATIONSHIP OF APU SYSTEM COMPONENTS, "INTERFACED" TO MAIN ENGINE "STARTER" COMPONENTS	DRAWING	15-13
15-1.4	APU VISUAL CHECK	TASK	15-14
15-1.5	APU OPERATIONAL CHECK	TASK	15-16


APU START ACCUMULATOR (RBL 20, STA 555)
APU START MODULE (RBL 20, STA 585)
ENGINE NO. 2 STARTER
UTILITY RESERVOIR / COOLER MODULE
UTILITY RETURN CONTROL MODULE (STA 534) RBL15
UTILITY RESERVOIR DEPRESSURIZE VALVE (STA 540)
NORMAL
OPEN
NO. 2 (RIGHT) ENGINE R SIDE
OVERHEAD PANEL
HYDRAULIC HAND PUMP (STA 537)
APU ON
UTIL HYD SYS
HYDRAULIC CONNECTION ACCESS PANEL
101K2 NO. 2 ENGINE START RELAY
MASTER CAUTION PANEL


NO. 1 (LEFT) ENGINE LH SIDE
ENGINE NO. 1 STARTER
MOTOR PUMP
AUXILIARY POWER UNIT
UTILITY PRESSURE CONTROL MODULE (STA 534) LBL15
APU MANUAL FUEL SHUTOFF VALVE (LH SIDE STA 540)
WITH CABLE ADAPTER 138A3
101K1 NO. 1 ENGINE START RELAY
APU FAULT RELAY (LH SIDE STA 360, WL 40.0)
ELECTRONIC SEQUENCE UNIT (LH SIDE, STA 519, WL 42)
APU FUEL SOLENOID VALVE
(LEFT AFT INTERTANK BAY)
APU FUEL BOOST PUMP

15-1.2 OVERALL ELECTRICAL CABLING INTERCONNECTIONS OF APU SYSTEM COMPONENTS, "INTERFACED" TO MAIN ENGINE "STARTER" COMPONENTS

COCKPIT SECTION



NOTES:

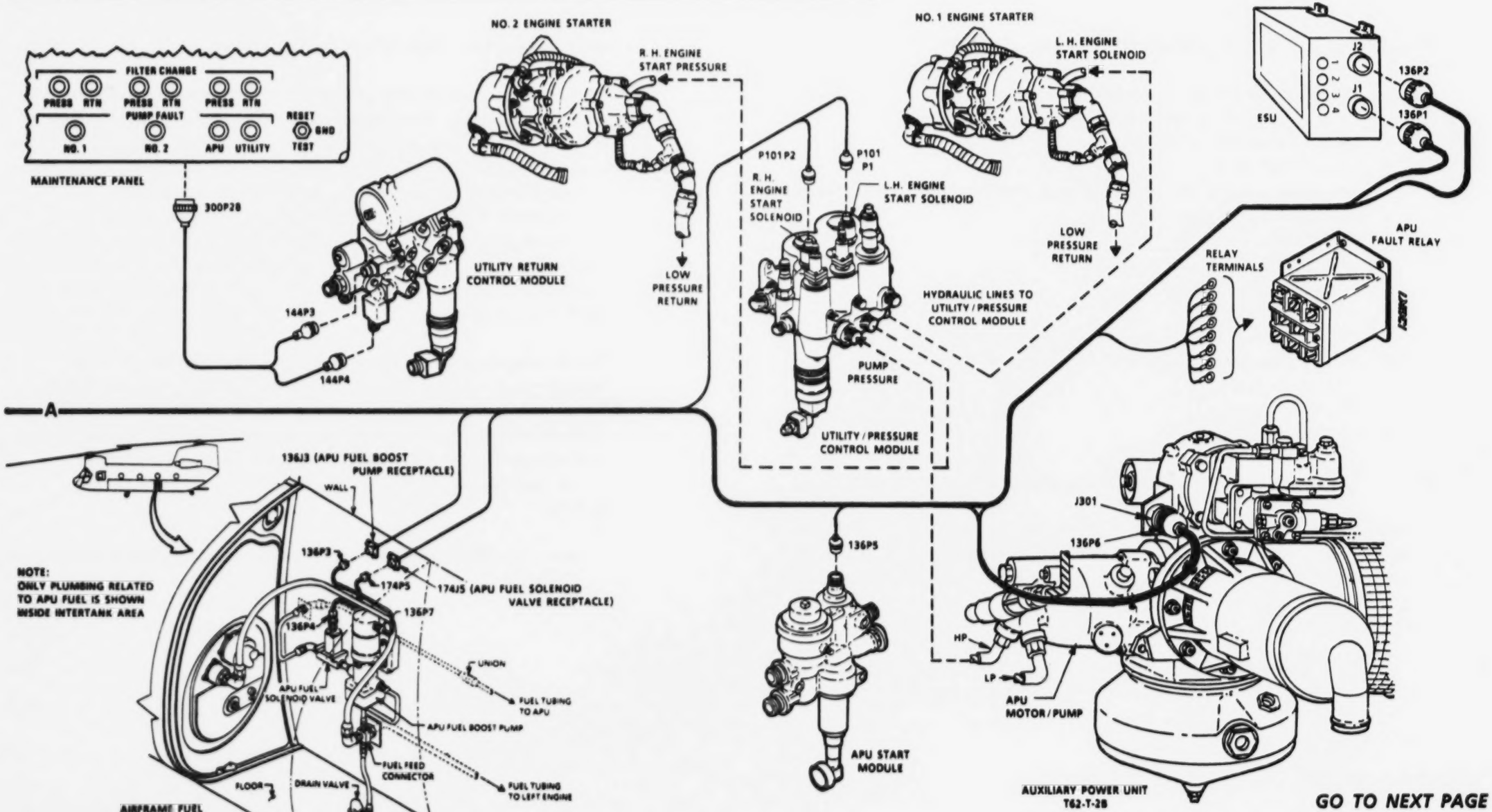
1 – ADDITIONAL WIRING DETAILS FOR ENGINE STARTER SHOWN IN TASKS 4-2.2 AND 15-5.3

2 – ADDITIONAL WIRING DETAILS FOR APU STARTING SHOWN IN TASKS 15-2.5 AND 15-2.6

3 – ADDITIONAL WIRING DETAILS FOR UTILITY HYDRAULIC CIRCUITS SHOWN IN TASK 7-2.2

15-1.2 OVERALL ELECTRICAL CABLING INTERCONNECTIONS OF APU SYSTEM COMPONENTS, "INTERFACED" TO MAIN ENGINE "STARTER" COMPONENTS (CONTINUED)

AIRFRAME SECTION



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15-1 APU TO AIRFRAME INTERFACE

15-1.2 OVERALL ELECTRICAL CABLING INTERCONNECTIONS OF APU SYSTEM COMPONENTS, "INTERFACED" TO MAIN ENGINE "STARTER" COMPONENTS (CONTINUED)

A. OVERVIEW – OF APU ***INTERFACED*** TO MAIN ENGINE STARTERS

The APU ***Interfaced*** to the Main Engine Starters includes the activation of the following components and interconnections as shown in paragraph 15-1.2.

1. Hydraulic **STARTERS** on each engine
2. Engine START valves
3. Solenoid-operated pilot valves on the Utility System Pressure Control Modules
4. Start switches and Relays
5. Caution lights
6. Ignition LOCK switch
7. Start Fuel Solenoid Valve
8. APU Fuel Solenoid Valve
9. APU Fuel Boost Pump
10. APU Electronic Sequence Unit (ESU)
11. APU FAULT RELAY
12. APU Ignition exciter
13. APU T62-T-2B Engine

B. BRIEF OPERATIONAL DESCRIPTION OF MAIN ENGINE START SYSTEM

When the Main Engine **start** switch is moved to MOTOR, the STARTER ON caution light comes "ON" and the Engine Start valve "OPENS." The START VALVE applies UTILITY SYSTEM ***PRESSURE*** from the **APU** to the Main Engine starter; thus rotating the Engine Starter and Compressor.

Note: For additional information refer to task 15-5.5 – **ENGINE** Hydraulic Starting System Operational check and 4-4 – Engine Start and Ignition System.

C. BRIEF OPERATIONAL DESCRIPTION OF **APU SYSTEM**

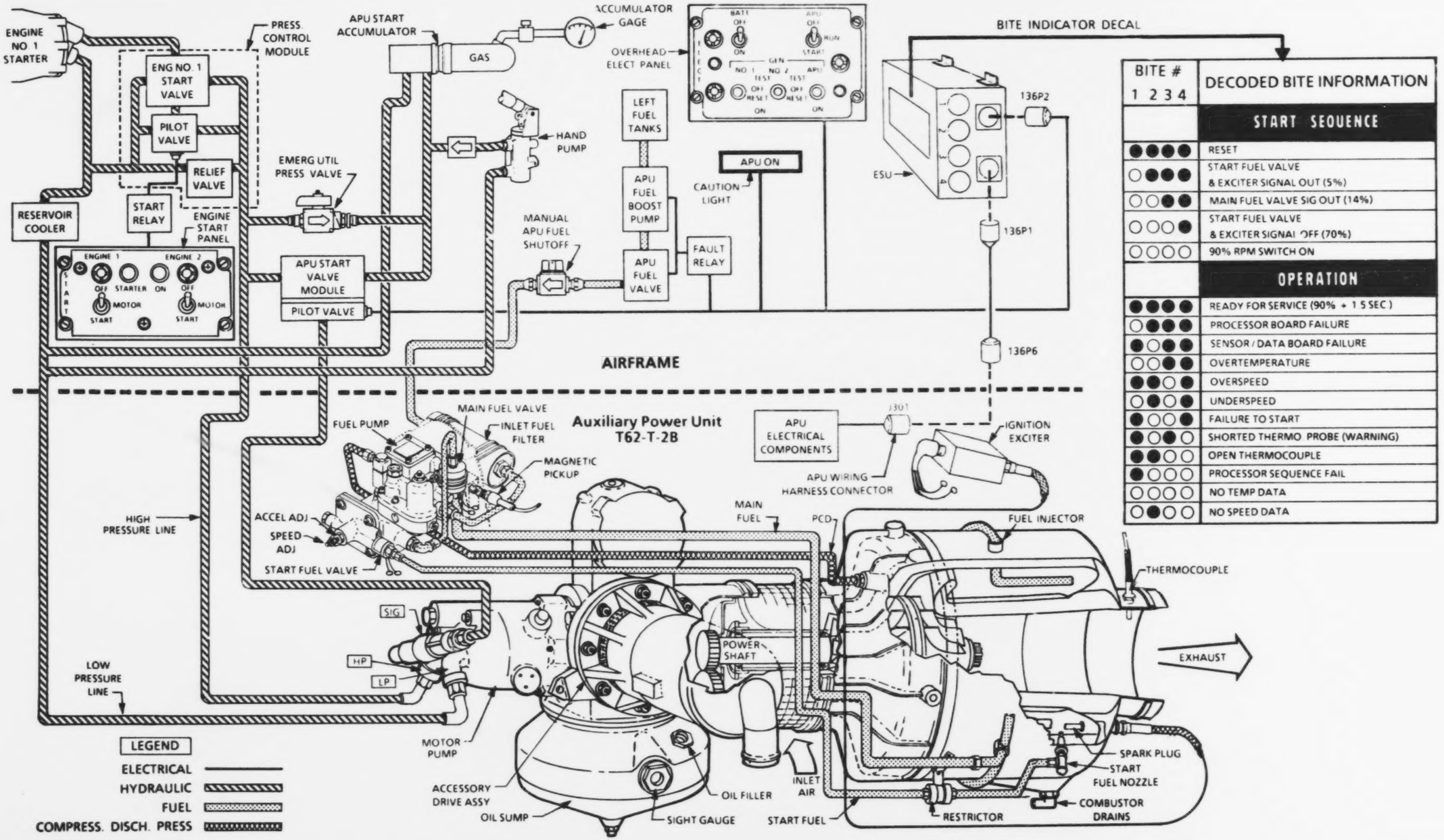
The Gas Turbine Auxiliary Power Unit T62-T-2B (APU) is mounted in the aft cabin above the ramp. The basic components of the APU are the gas turbine engine, hydraulic motor-pump, fuel control, accessory drive, and ac generator. An APU control box, ESU, which monitors APU operation is on the left side of the cabin above the ramp. The motor-pump on the APU pressurizes the utility and flight control hydraulic systems for main engine starting and ground checks. The APU also drives an ac generator which supplies power to No. 1 and No. 2 electrical systems. The APU receives fuel from the left fuel system thru a booster pump, a manual fuel shutoff valve, and a solenoid valve.

The APU control switch is on the electrical power panel on the overhead switch panel. It is a three-position switch marked APU OFF, RUN, and START. The switch is spring loaded from RUN to START. To start the APU, the switch is moved from OFF to RUN for 3 to 5 seconds, then set to START for 2 seconds, then released to RUN. APU start is then automatic and controlled by the control box. The APU ON caution light will come on in about 10 to 12 seconds.

Note: For additional information, refer to Task 15-1.5, APU Operational Check

END OF TASK

15-1.3 OVERALL PIPING INTERRELATIONSHIP OF APU SYSTEM COMPONENTS, "INTERFACED" TO MAIN ENGINE STARTER COMPONENTS



BITE # 1 2 3 4	DECODED BITE INFORMATION
	START SEQUENCE
●●●●	RESET
○●●●	START FUEL VALVE & EXCITER SIGNAL OUT (5%)
○○●●	MAIN FUEL VALVE SIG OUT (14%)
○○○●	START FUEL VALVE & EXCITER SIGNAL OFF (70%)
○○○○	90% RPM SWITCH ON
	OPERATION
●●●●	READY FOR SERVICE (90% + 1 5 SEC)
○●●●	PROCESSOR BOARD FAILURE
●○●●	SENSOR / DATA BOARD FAILURE
○○●●	OVERTEMPERATURE
●●○●	OVERSPEED
○●○●	UNDERSPEED
●○○●	FAILURE TO START
●○●○	SHORTED THERMO. PROBE (WARNING)
●●○○	OPEN THERMOCOUPLE
●○○○	PROCESSOR SEQUENCE FAIL
○○○○	NO TEMP DATA
○●○○	NO SPEED DATA

15-1.4 APU VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

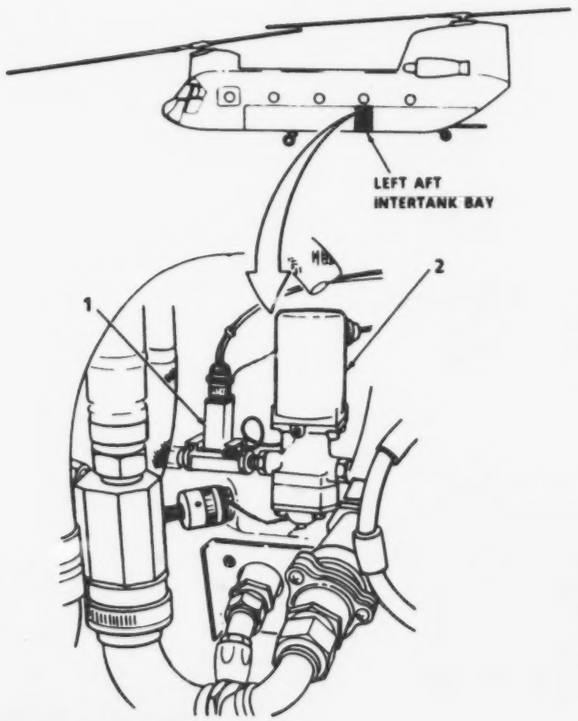
Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
Work Stand

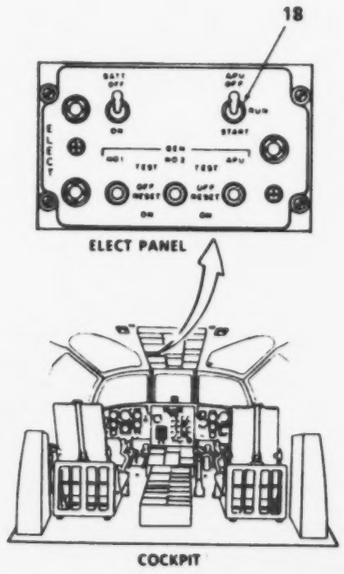
Materials:
None

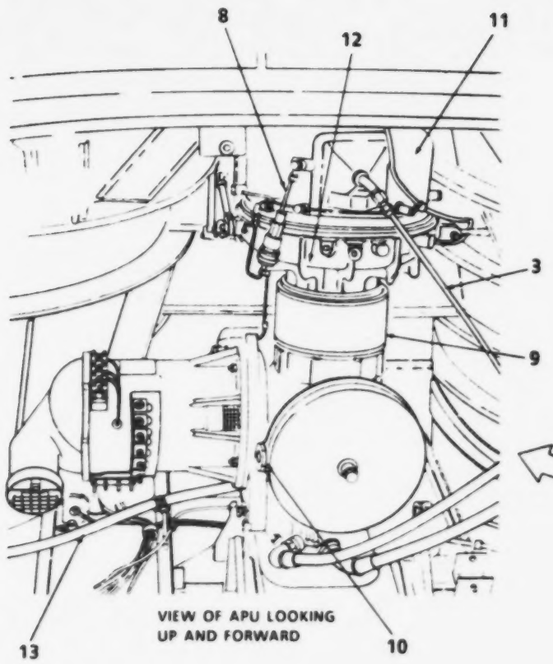
Personnel Required:
Medium Helicopter Repairer

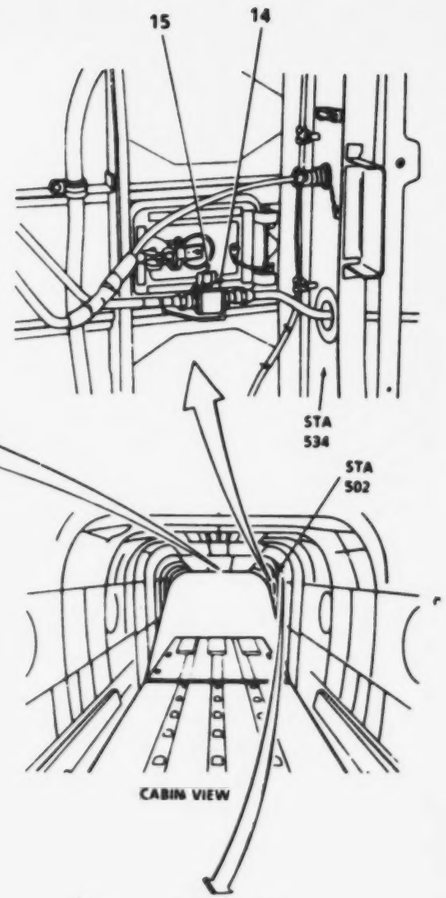
References:
TM 55-1520-240-23

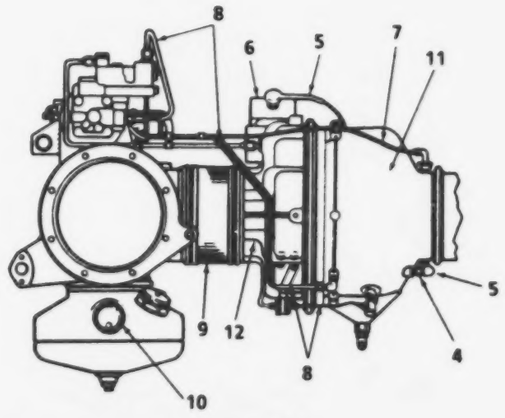
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Ext Electrical Power Off
Ext Hydraulic Power Off
Left Aft Intertank Bay
Access Door Open
APU Drip Pan Removed
Ramp Opened and Level

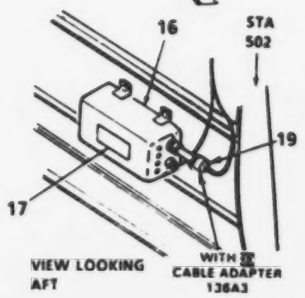












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15-1.4 APU VISUAL CHECK (CONTINUED)

TASK	RESULT
1. **Check APU fuel valve (1).**	If fuel valve (1) is loose or damaged, tighten or replace it as required. If electrical connector or wiring to valve is damaged, replace connector or repair or replace wiring as required.
2. **Check APU fuel boost pump (2).**	If fuel boost pump (2) is loose or damaged, tighten or replace it as required. If electrical connector or wiring to pump is damaged, replace connector or repair or replace wiring as required.
3. **Check APU combustor drain line (3).**	If drain line (3) is kinked or damaged, replace it. If it is loose, tighten it.
4. **Check APU spark plug (4), exciter cable (5), and ignition exciter (6).**	If spark plug (4), exciter cable (5), or ignition exciter (6) is loose or damaged, tighten or replace it as required.
5. **Check APU thermocouple cable (7).**	If cable (7) is loose or damaged, tighten or replace it as required.
6. **Check two APU fuel lines (8).**	If any fuel line (8) is damaged, replace it.
7. **Check APU air inlet screen (9).**	If screen (9) is clogged, clean it.
8. **Check APU oil level sight gage (10).**	If oil level is low, service APU.
9. **Check APU combustor case (11) and turbine case (12).**	If either case (11 or 12) is cracked or damaged, replace APU.
10. **Check APU fuel line (13).**	If fuel line (13) is kinked or damaged, replace it.
11. **Check APU fuel shutoff manual valve (14).**	If valve (14) is loose or damaged, tighten or replace it as required. If valve handle (15) is not in line with fuel line, set it in that position.
12. **Check electronic sequence unit (ESU) (16).**	If ESU (16) is loose or damaged, tighten or replace it as required. If electrical connector or wiring to ESU is damaged, replace connector or repair or replace wiring as required. If bite information chart (17) is damaged, replace it.
13. **Check APU switch (18).**	If switch (18) is loose or damaged, tighten or replace it as required.
14. **On helicopter with [33], check cable adapter (19).**	If cable adapter (19) is loose or damaged, tighten or replace it as required.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Left aft intertank bay access door closed
APU drip pan installed.

END OF TASK

15-1.5 APU OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Stopwatch

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Ext Electrical Power Off
Ext Hydraulic Power Off
APU Start Accumulator Charged to 2850 Psi
APU Visual Check Performed (Task 15-1.4)
Helicopter Positioned Nose Into Wind
Rotor Blades Positioned so that one aft blade is behind and 30 degrees off center line.

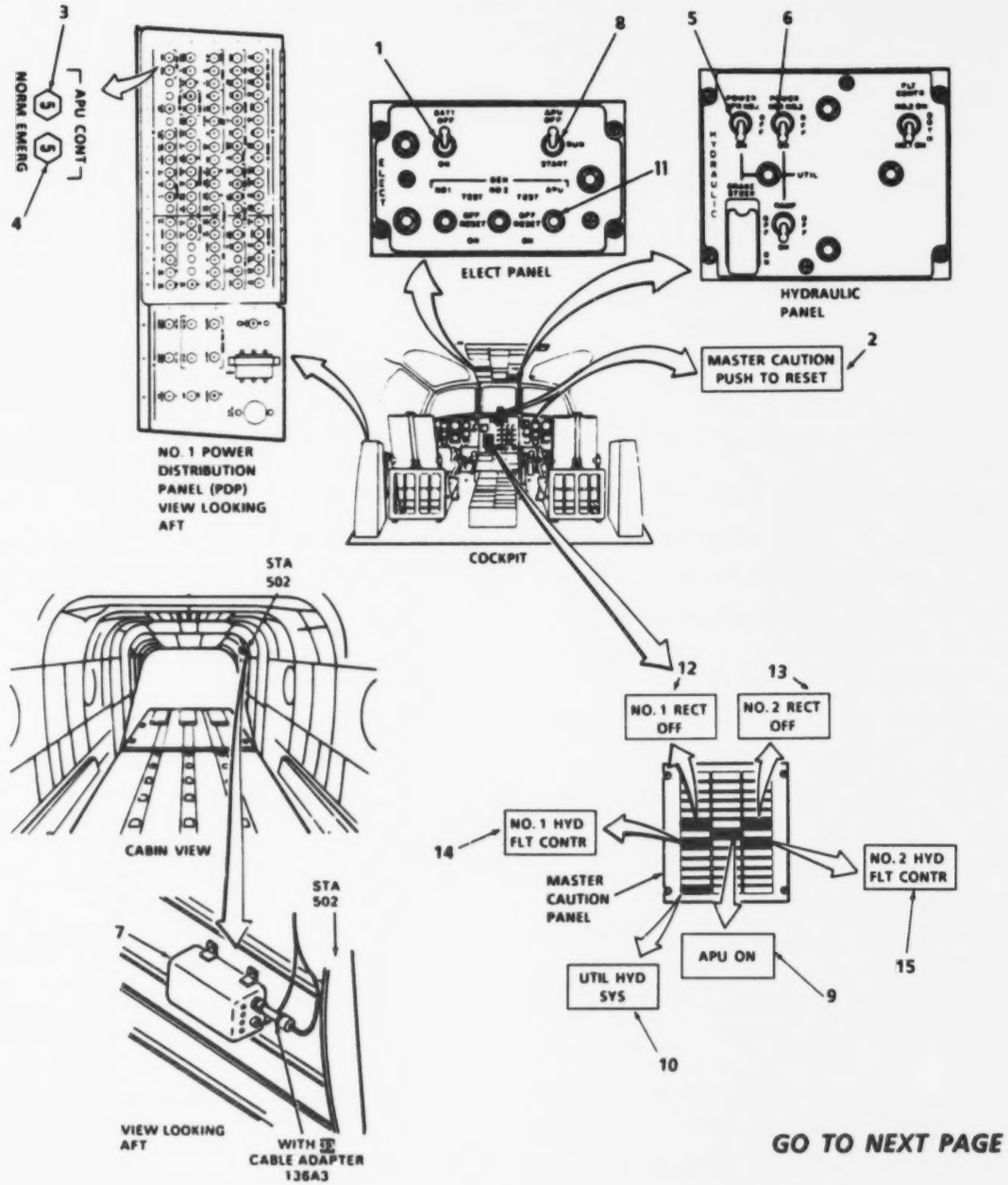
General Safety Instructions:

WARNING

Keep hands away from flight controls. Application of hydraulic power will cause flight controls to move and rotor blades to flap. Injury to personnel can occur

TASK	RESULT
1. **Set BATT switch (1) to On.**	MASTER CAUTION lights (2) shall come on. If not, go to task 9-1.4.
2. **Press Pilot's MASTER CAUTION light (2).**	MASTER CAUTION lights (2) shall go out. If not, go to task 9-18.3.
3. **Check that APU CONT NORM and EMERG circuit breakers (3 and 4) are closed.**	If circuit breaker (3 or 4) is open, close it. If either circuit breaker opens again, go to task 15-2.7.
NOTE Post fireguard at APU.	
4. **Check that POWER XFR NO. 1 and POWER XFR NO. 2 switches (5 and 6) are at OFF.**	If switches (5 or 6) are ON, set them to OFF.
5. Position helper to observe bite indicators on ESU (7).	
6. **Set APU switch (8) to RUN. Hold at RUN for a minimum of 3 seconds.**	BITE indicator #1 on ESU (7) changes from black to white and then is reset to black. All other indicators remain black or are reset to black. NOTE: If Bite #1 is already white, this task resets it to black, along with the other BITE indicators.

(Continued)



GO TO NEXT PAGE

TASK	RESULT
	If BITE indicators do not remain black, go to task 15-2.8. If fuel boost pump cannot be heard operating, go to task 15-2.9.
CAUTION **If a roar is heard and a flame is seen at APU exhaust during APU start, shut down APU to prevent APU damage.**	
CAUTION **If there is no hydraulic pressure in 30 seconds after APU switch is released to RUN, shut down APU.**	
CAUTION **If APU is to be restarted or another start attempt tried, wait at least 30 seconds after APU has stopped before setting APU switch to START. This allows residual fuel to drain from APU, thereby preventing overspeed or overtemp conditions.**	
7. **Set APU switch (8) to START for minimum of 2 seconds then release it to RUN.**	APU shall begin to motor and accelerate to running speed within 30 seconds. ESU (7) BITE indicators shall sequence from all black to all white, then all black. APU ON capsule (9) shall come on. UTIL HYD SYS capsule (10) shall go out. If roar is heard and flame is seen at APU exhaust (hot start), shut down APU to prevent damage and go to task 15-6.17.
NOTE Observe ESU bite indicators sequencing during start. Note last two sequences when automatic shutdown occurs. Do not move APU switch until bite indications are recorded unless hot start occurs.	If APU does not motor, go to task 15-2.10. If APU motors but does not start or starts and automatically shuts down, check ESU bite indicators and refer to table 15-2.2 for maintenance action. If APU runs and ESU bite is black but APU ON capsule is not on, go to task 15-2.13. If APU runs and UTIL HYD SYS capsule (10) does not go out, shut down APU and go to task 7-2.4.
8. **Set APU GEN switch (11) to ON.**	NO. 1 RECT OFF and NO. 2 RECT OFF capsules (12 and 13) shall go out. APU ON capsule (9) shall stay on. If capsules do not go out, go to task 9-1.4. If APU capsule goes out, check ESU bite indicators and refer to table 15-2.2 and / or task 15-2.14.
9. **Set POWER XFR NO. 1 and POWER XFR NO. 2 switches (5 and 6) to ON.**	NO. 1 HYD FLT CONTR and NO. 2 HYD FLT CONTR capsules (14 and 15) shall go out. If not, go to task 7-2.15. APU ON capsule (9) shall stay on. If it goes out, check ESU bite indicators and refer to table 15-2.2.
10. **Open then close APU CONT NORM circuit breaker (3).**	APU ON capsule (9) shall stay on. If it goes out, go to task 15-2.11.
11. Open then close APU CONT EMERG circuit breaker (4).	APU ON capsule (9) shall stay on. If it goes out, go to task 15-2.11.
12. Set POWER XFR NO. 1 and POWER XFR NO. 2 switches (5 and 6) to OFF.	NO. 1 HYD FLT CONTR and NO. 2 FLT CONTR capsules (14 and 15) shall come on.
13. Set APU GEN switch (11) to OFF.	NO. 1 RECT OFF and NO. 2 RECT OFF capsules (12 and 13) shall come on. APU shall remain running. If APU shuts down, go to task 15-2.15.
14. Set APU switch (8) to OFF.	APU shall shut down. APU ON capsule (9) shall go out. If APU does not shut down, go to task 15-2.12.
CAUTION **Cycling of the APU switch during APU coastdown may cause the APU to restart with a possible overtemperature.**	

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery disconnected
Electrical power off

END OF TASK

15-2 APU ELECTRICAL SYSTEM

PARAGRAPH 15-2

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APU ELECTRICAL SYSTEM TROUBLESHOOTING

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PARAGRAPH 15-2

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AUXILIARY POWER UNIT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD128		151	LH AFT CABIN	360	32	50L
GD129		151	AFT AT APU AREA	594	60	20R
GD130		151	LH AFT TAIL	510	50	45L
GD153		151	LH AFT CABIN	380	-15	50L
P302	MS3456W10SL-4S	46	MAGNETIC PICKUP – APU	605	65	0L
P303	MS3456L10SL-3S	70	IGNITION EXCITER – APU	605	66	8R
TB3	MS27212-1-12	160	NO. 1 PDP – COCKPIT	90	-10	30L
TB301	MS27212-1-5	160	APU	605	65	6R
136K1	MS24149-D1	106	APU FAULT RELAY	360	40	50L
136P1	M83723-96A1624N	35	J1 OF ESU	520	40	50L
136P2	M83723-95A1415N	34	J2 OF ESU	520	40	50L
136J3	MS3474W12-3S	16	AIRCRAFT SKIN – TANK SIDE-CABLE TO APU FUEL PUMP – LH POD	380	-5	50L
136P4	MS3456W10SL-4S	46	APU FUEL VALVE – LH POD	375	-20	54L
136P5	M83723-95A1005N	30	APU HYD START VALVE	575	50	30R
136P6	M83723-95A1624N	71	J301 OF APU	594	65	8L
174J5	MS3474W14-19S	21	AIRCRAFT SKIN – INSIDE	385	-5	50L
174P5	MS3476W14-19P	21	AIRCRAFT SKIN – TANK SIDE	385	-5	50L
232P1	MS3476W20-41S	24	MASTER CAUTION PANEL – CENTER INST PNL			
300J1	M83723-74A2041N	40	NO. 1 PDP – COCKPIT			
300P1	M83723-75A2041N	40	NO. 1 PDP – COCKPIT			
300J19	M83723-73A2041N	40	OVERHEAD PANEL – COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL – COCKPIT			
300J21	M83723-74A2461N	43	OVERHEAD PANEL – COCKPIT			
300P21	M83723-75A2461N	43	OVERHEAD PANEL – COCKPIT			
300J50	M83723-73A2461N	43	ELECTRONICS COMPARTMENT – OVHD	120	40	20L
300P50	M83723-76A2461N	43	ELECTRONICS COMPARTMENT – OVHD	120	40	20L
300J54	M83723-74A2461N	43	AFT CROWN	460	50	20L
300P54	M83723-75A2461N	43	AFT CROWN	460	50	20L
300J61	M83723-73A24619	43	CONSOLE – UNDERFLOOR	85	-20	10L
300P61	M83723-76A24619	43	CONSOLE – UNDERFLOOR	85	-20	10L

AUXILIARY POWER UNIT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

16

PLUG

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RECEPTACLE

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PLUG

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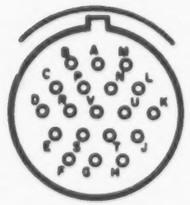

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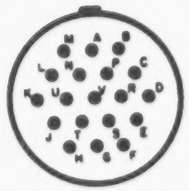

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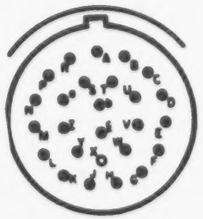

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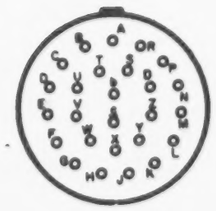

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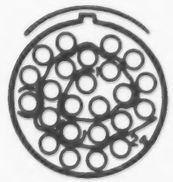

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AUXILIARY POWER UNIT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

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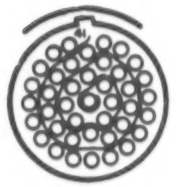

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PLUG

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RECEPTACLE

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PLUG

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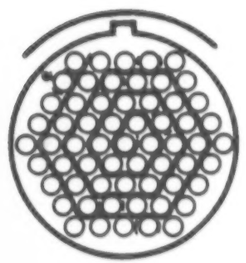

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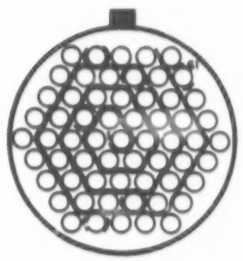

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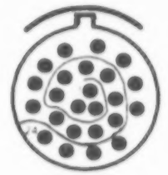

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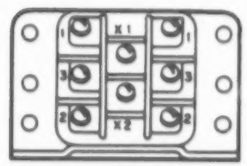

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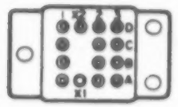

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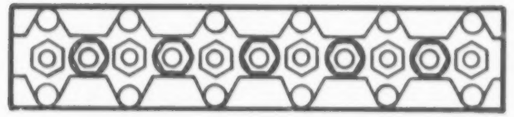
TERMINAL BOARD



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15-2 APU ELECTRICAL SYSTEM

15-2.1 APU STARTING SEQUENCE FAILURES

TABLE NO. 15-2.1 APU **STARTING** SEQUENCE FAILURES

APU STARTING SEQUENCE	No.	SYMPTOM	BITE INDICATION	DECODED BITE INFORMATION	TASK
PRE START					
	1	**APU DOES NOT MOTOR** ESU Bite indicates	○○○○	NO TEMP DATA	15-2.10
MOTORING					
	2	**APU MOTORS BUT DOES NOT START** ESU Bite indicates	○●○○	NO SPEED DATA	15-6.11
	3	**APU MOTORS BUT DOES NOT START** ESU Bite indicates	○●●● or ○○●● then ●○○●	FAILURE TO START	15-6.12
	4	**APU MOTORS BUT DOES NOT START** ESU Bite indicates	○○○● then ●○○●	FAILURE TO START	15-6.13
STARTING					
	5	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	●●○●	OVERSPEED	15-6.14
	6	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	○●○●	UNDERSPEED	15-6.15
	7	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	●●○○	OPEN THERMOCOUPLE	15-6.18
HOT START					
	8	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	○○●●	OVERTEMPERATURE	15-6.17
STARTS AND RUNS					
	9	**APU STARTS AND RUNS** but ESU Bite indicates	●○●○	SHORTED THERMO. PROBE (warning)	15-6.19

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TABLE NO. 15-2.2 BITE INDICATION TABLE FOR APU **SYSTEMS** FAILURES

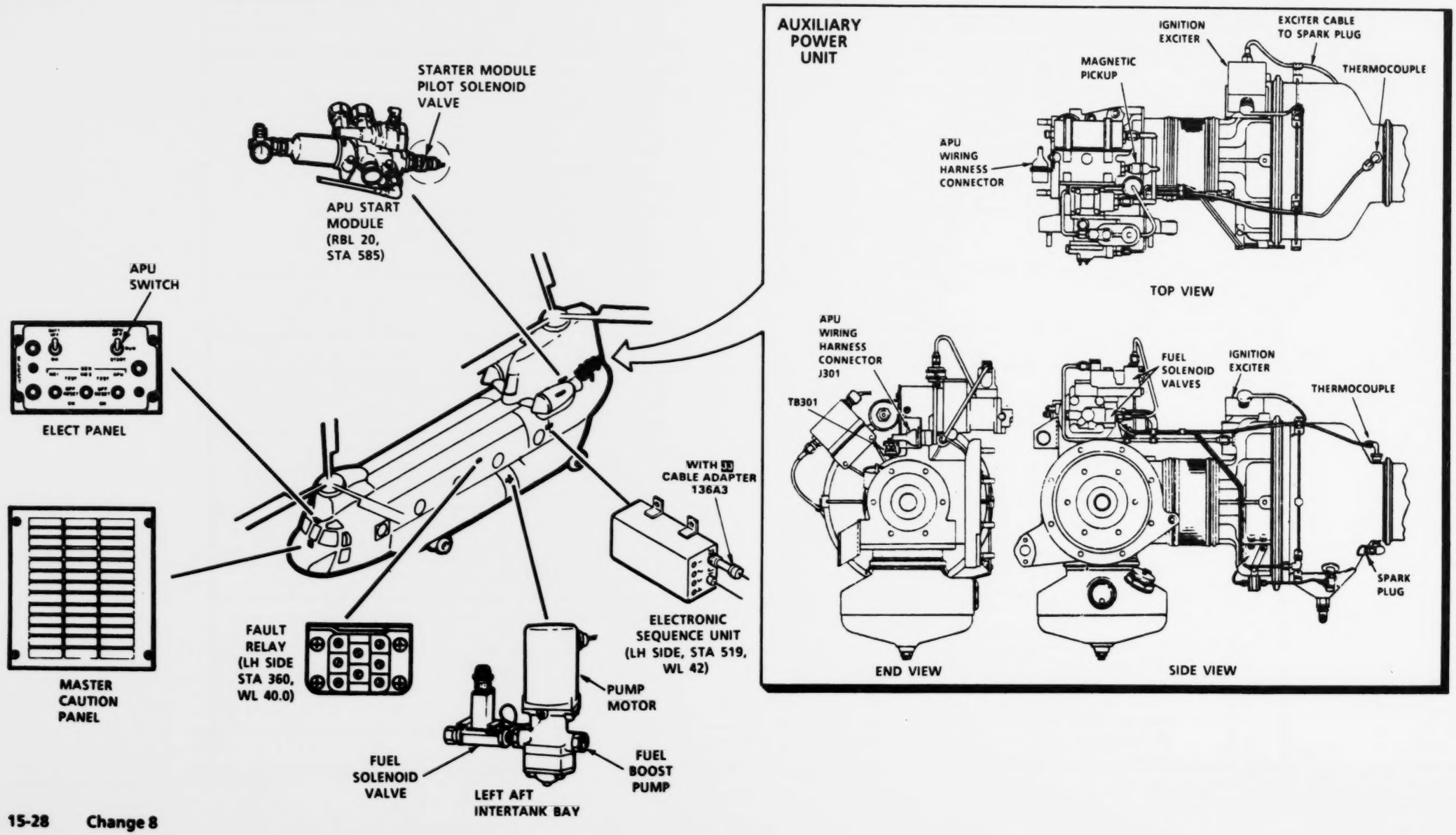
NO.	BITE INDICATION	SYMPTOM	DECODED BITE DESCRIPTION	Maintenance Action Task No.
	APU DOES NOT MOTOR:			
1	○●●●	ESU Bite indicates ○●●●	PROCESSOR BOARD FAILURE	15-2.10
2	●○●●	ESU Bite indicates ●○●●	SENSOR / DATA BOARD FAILURE	15-2.10
3	●○○○	ESU Bite indicates ●○○○	PROCESSOR SEQUENCE FAIL	15-2.10
4	○○○○	ESU Bite indicates ○○○○	NO TEMP DATA	15-2.10
	APU MOTORS BUT DOES NOT START:			
5	○○●● then ●○○●	ESU Bite indicates ●○○●	FAILURE TO START	15-3.6
6	○○○● then ●○○●	ESU Bite indicates ●○○●	FAILURE TO START	15-3.7
7	○●●● or ○○●● then ●○○●	ESU Bite indicates ●○○●	FAILURE TO START	15-4.11
8	○●○○	ESU Bite indicates ○●○○	NO SPEED DATA	15-6.11
9	○●●● or ○○●● then ●○○●	ESU Bite indicates ●○○●	FAILURE TO START	15-6.12
10	○○○● then ●○○●	ESU Bite indicates then ●○○●	FAILURE TO START	15-6.13

15-2.2 APU SYSTEMS BITE INDICATION FAILURE TABLE (CONTINUED)

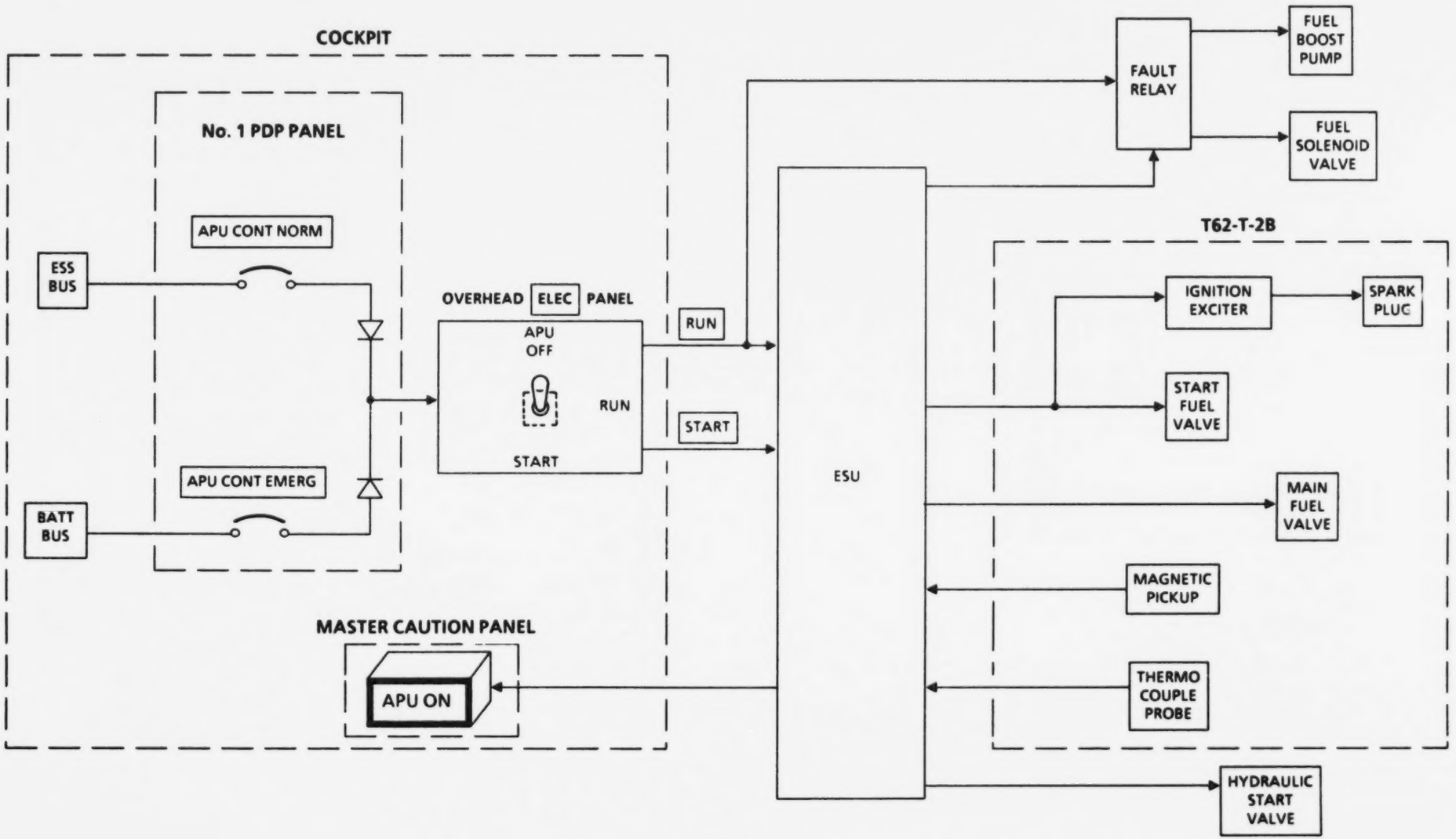
TABLE NO. 15-2.2 BITE INDICATION TABLE FOR APU SYSTEMS FAILURES (Continued)

NO.	BITE INDICATION	SYMPTOM	DECODED BITE DESCRIPTION	Maintenance Action Task No.
	APU STARTS BUT SHUTS DOWN			
11	○○○○ then ●●○●	ESU Bite indicates ●●○●	OVERSPEED	15-6.14
12	○○○● then ○●○●	ESU Bite indicates ○●○●	UNDERSPEED	15-6.15
13	○○○● then ○○●●	ESU Bite indicates ○○●●	OVERTEMPERATURE (HOT START)	15-6.16
14	○○●● then ●●○○	ESU Bite indicates ●●○○	OPEN THERMOCOUPLE	15-6.18
	APU STARTS AND RUNS BUT SHUTS DOWN			
15	○○○○ then ○○●●	ESU Bite indicates ○○●●	OVERTEMPERATURE (HOT START)	15-6.17
	APU STARTS AND RUNS			
16	●○●○	ESU Bite indicates ●○●○	SHORTED THERMO. PROBE (WARNING)	15-6.19
	APU SHUTS DOWN WHEN GEN APU SWITCH PLACED TO ON			
17	●●●●	ESU Bite indicates ●●●●	READY FOR SERVICE	15-2.14
	APU SHUTS DOWN WHEN APU GEN SWITCH IS SET TO OFF			
18	●●●●	ESU Bite indicates ●●●●	READY FOR SERVICE	15-2.15
	APU DOES NOT STOP			
19	●●●●	ESU Bite indicates ●●●●	READY FOR SERVICE	15-2.12

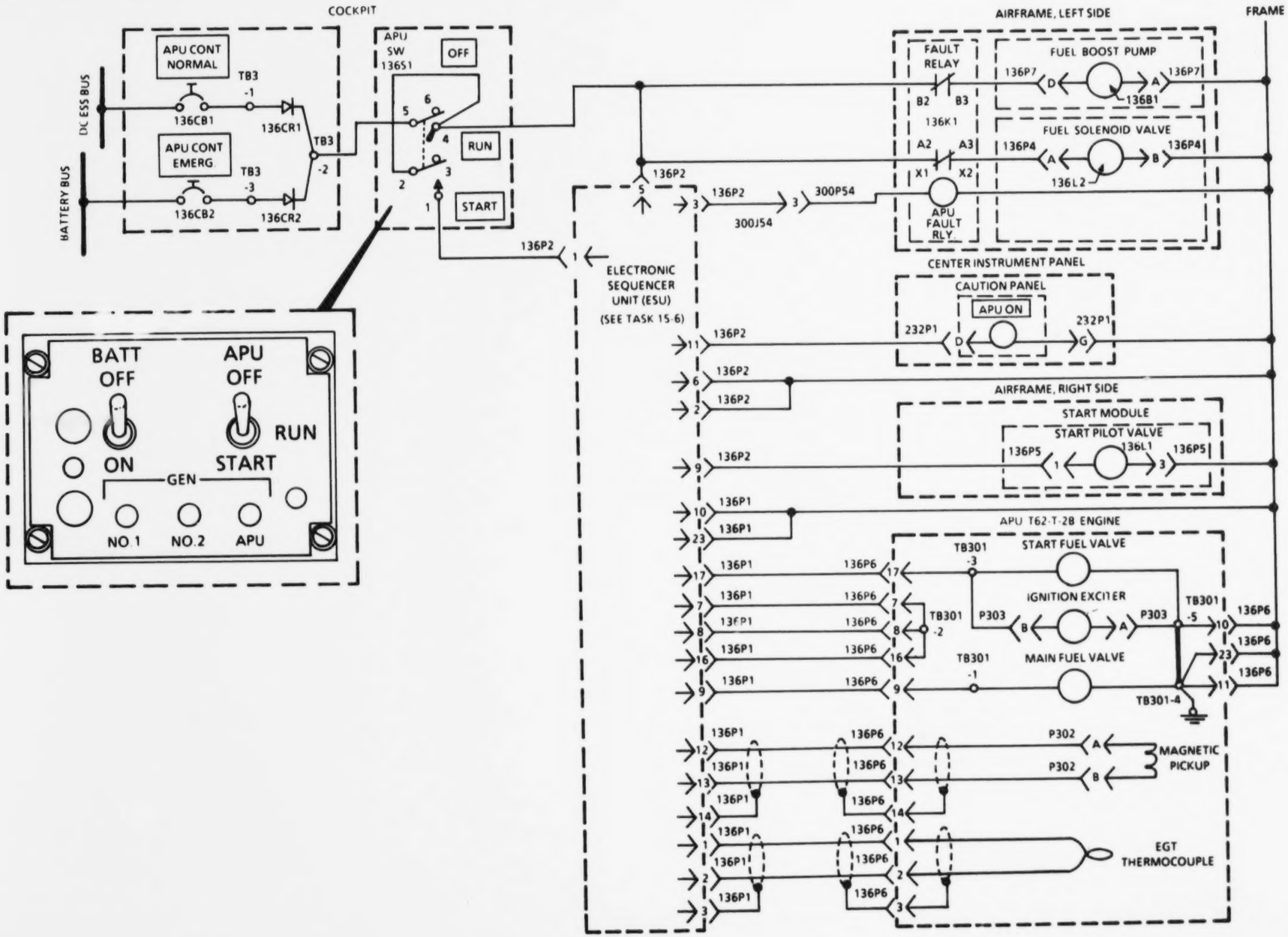
END OF TASK


STARTER MODULE PILOT SOLENOID VALVE
APU START MODULE (RBL 20, STA 585)
APU SWITCH
ELECT PANEL
MASTER CAUTION PANEL
FAULT RELAY (LH SIDE STA 360, WL 40.0)
WITH 55 CABLE ADAPTER 136A3
ELECTRONIC SEQUENCE UNIT (LH SIDE, STA 519, WL 42)
PUMP MOTOR
FUEL SOLENOID VALVE
FUEL BOOST PUMP
LEFT AFT INTERTANK BAY
AUXILIARY POWER UNIT
IGNITION EXCITER
EXCITER CABLE TO SPARK PLUG
MAGNETIC PICKUP
THERMOCOUPLE
APU WIRING HARNESS CONNECTOR
TOP VIEW
APU WIRING HARNESS CONNECTOR J301
TB301
END VIEW
FUEL SOLENOID VALVES
IGNITION EXCITER
THERMOCOUPLE
SPARK PLUG
SIDE VIEW

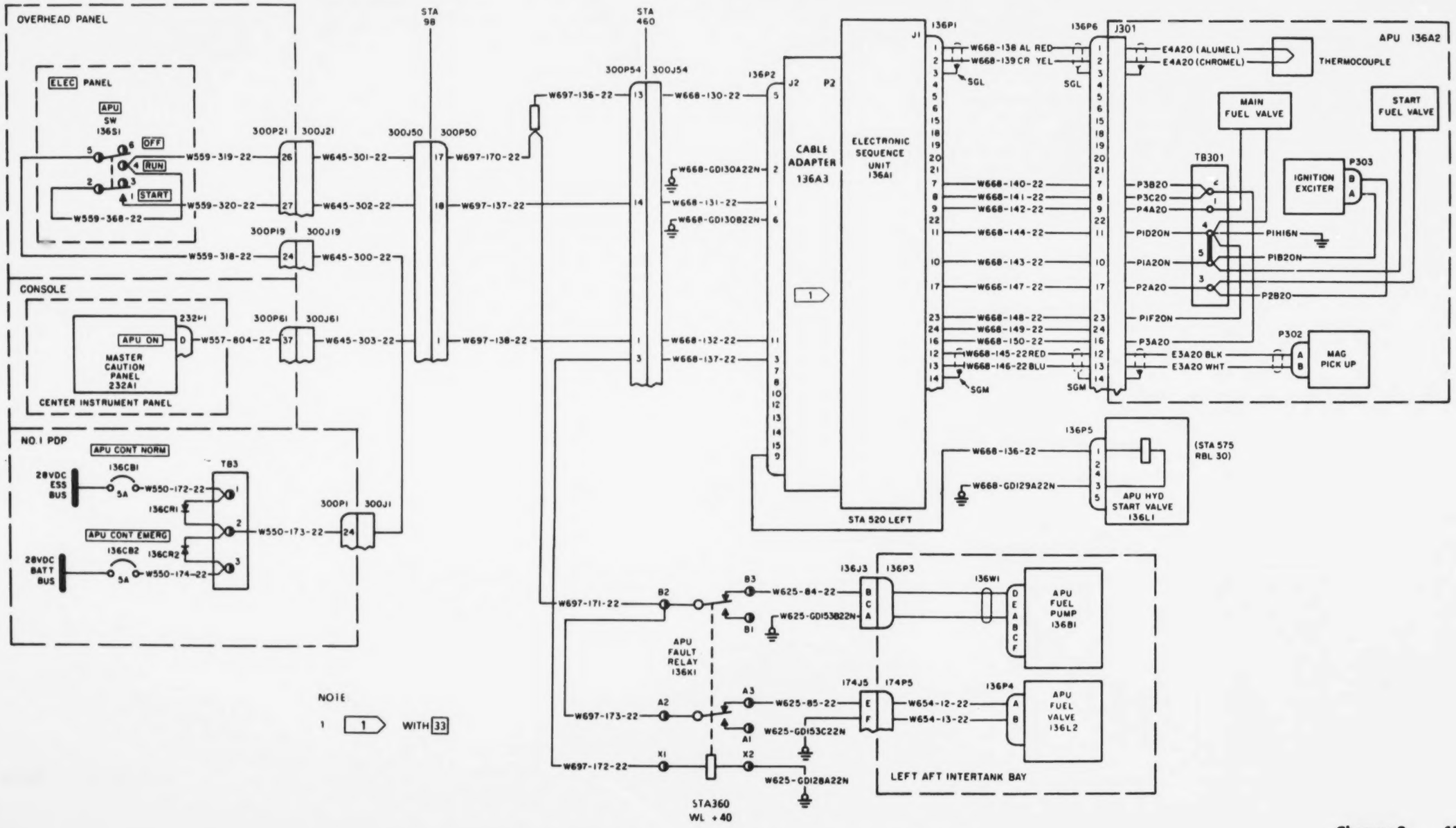
15-2.4 APU ELECTRICAL CONTROL SYSTEM BLOCK DIAGRAM



15-2.5 APU ELECTRICAL SCHEMATIC



15-2.6 APU WIRING DIAGRAM



15-2.7 APU CONT NORM OR APU CONT EMERG CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

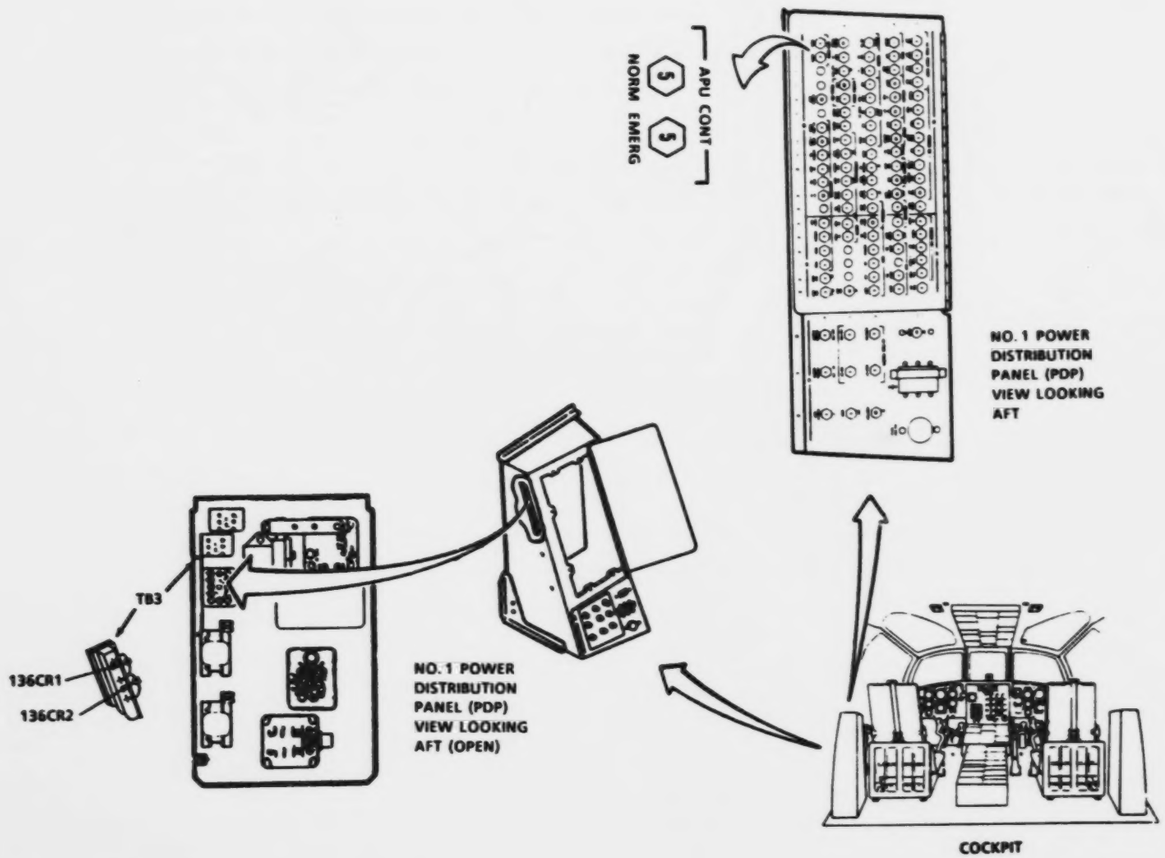
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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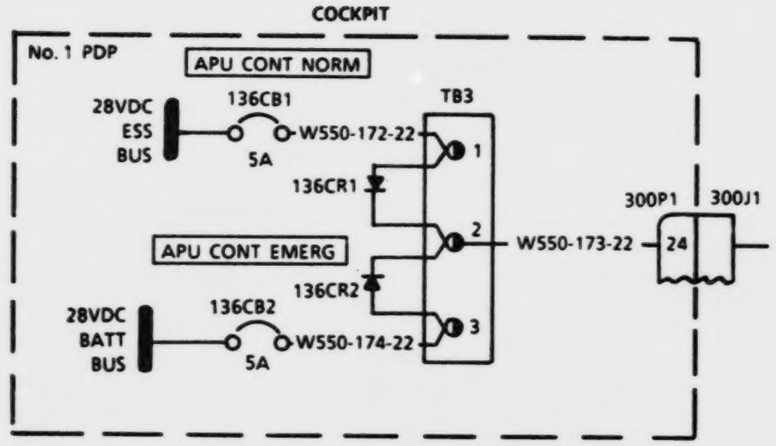
15-2.7 APU CONT NORM OR APU CONT EMERG CIRCUIT BREAKER DOES NOT STAY CLOSED (CONTINUED)



APU CONT "NORM" CIRCUIT BREAKER DOES NOT STAY CLOSED

REMOVE ELEC PWR OPEN NO 1 PDP LOCATE GROUND FAULT ON WIRE W550-172-22 BETWEEN APU CONT NORM CB 136CB1 AND TB3 TERM 1 REPAIR OR REPLACE WIRE AS REQUIRED

APU CONT "EMERG" CIRCUIT BREAKER DOES NOT STAY CLOSED

REMOVE ELEC PWR OPEN NO 1 PDP LOCATE GROUND FAULT ON WIRE W550-174-22 BETWEEN APU CONT EMERG CB 136CB2 AND TB3 TERM 3 REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

15-2.8 ESI' BITE INDICATORS DO NOT CYCLE AFTER APU SWITCH SET TO RUN

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

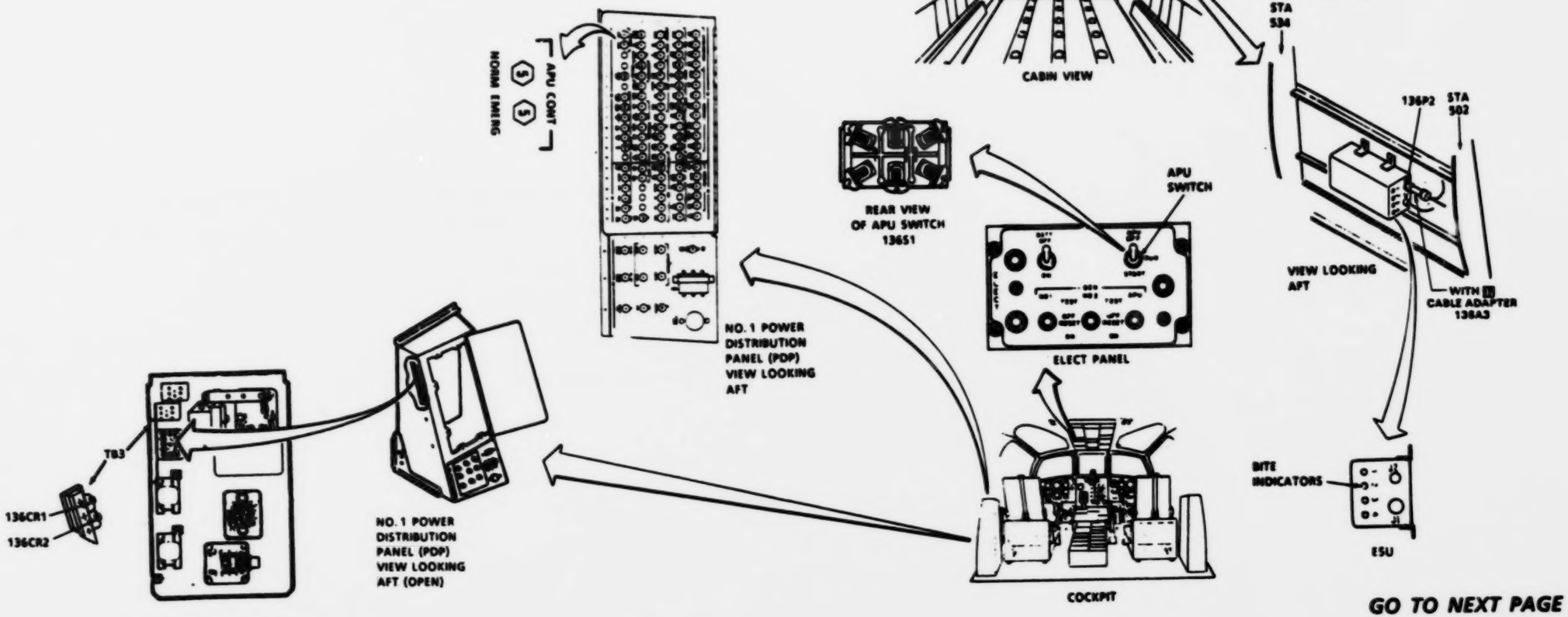
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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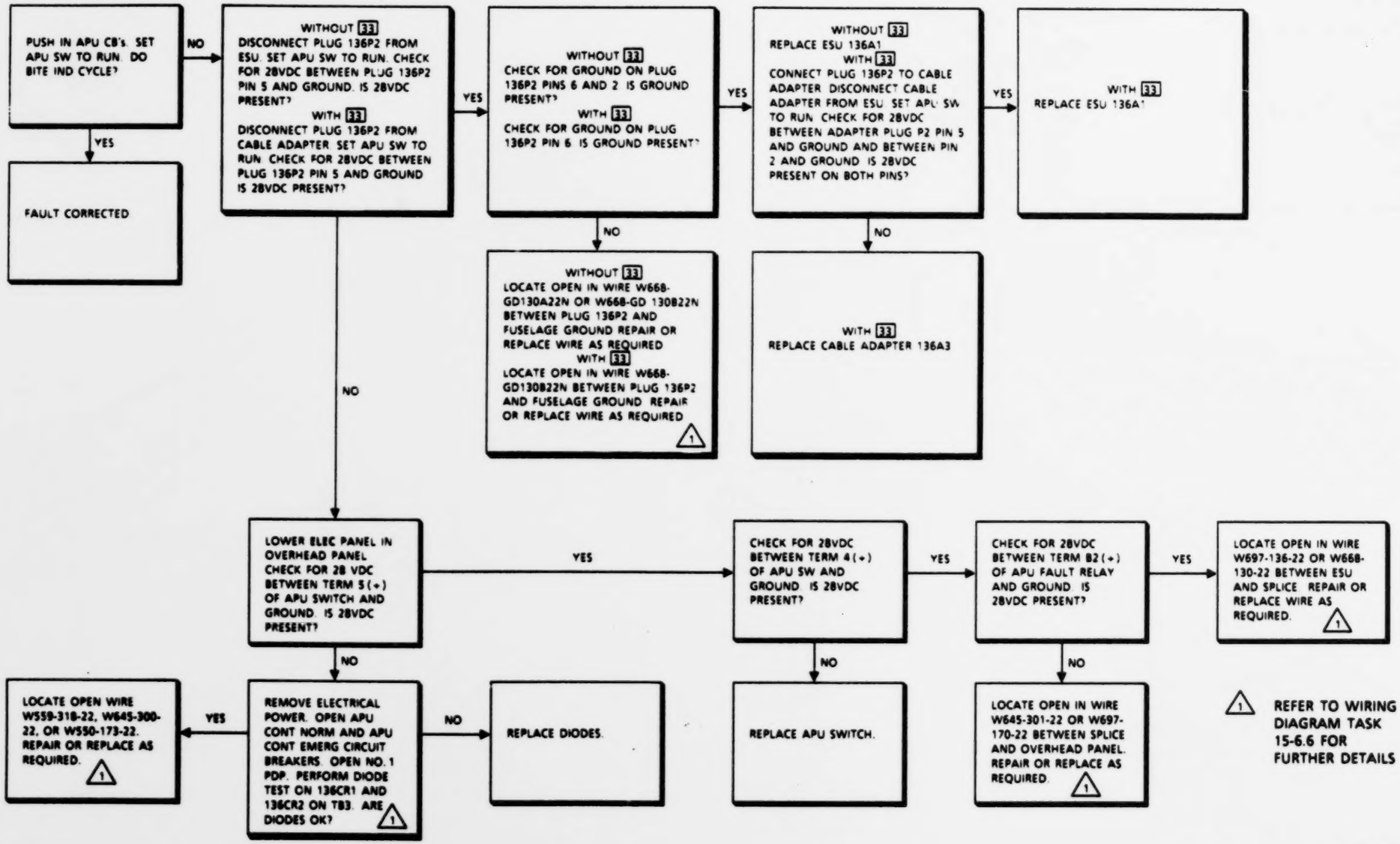
15-2.8 ESU BITE INDICATORS DO NOT CYCLE AFTER APU SWITCH SET TO RUN (CONTINUED)


PUSH IN APU CB's. SET APU SW TO RUN. DO BITE IND CYCLE?
NO
YES
FAULT CORRECTED
WITHOUT 33
DISCONNECT PLUG 136P2 FROM ESU. SET APU SW TO RUN. CHECK FOR 28VDC BETWEEN PLUG 136P2 PIN 5 AND GROUND. IS 28VDC PRESENT?
WITH 33
DISCONNECT PLUG 136P2 FROM CABLE ADAPTER. SET APU SW TO RUN. CHECK FOR 28VDC BETWEEN PLUG 136P2 PIN 5 AND GROUND IS 28VDC PRESENT?
YES
WITHOUT 33
CHECK FOR GROUND ON PLUG 136P2 PINS 6 AND 2. IS GROUND PRESENT?
WITH 33
CHECK FOR GROUND ON PLUG 136P2 PIN 6. IS GROUND PRESENT?
YES
WITHOUT 33
REPLACE ESU 136A1
WITH 33
CONNECT PLUG 136P2 TO CABLE ADAPTER. DISCONNECT CABLE ADAPTER FROM ESU. SET APU SW TO RUN. CHECK FOR 28VDC BETWEEN ADAPTER PLUG P2 PIN 5 AND GROUND AND BETWEEN PIN 2 AND GROUND. IS 28VDC PRESENT ON BOTH PINS?
YES
WITH 33
REPLACE ESU 136A1
NO
WITHOUT 33
LOCATE OPEN IN WIRE W668-GD130A22N OR W668-GD 130B22N BETWEEN PLUG 136P2 AND FUSELAGE GROUND REPAIR OR REPLACE WIRE AS REQUIRED
WITH 33
LOCATE OPEN IN WIRE W668-GD130B22N BETWEEN PLUG 136P2 AND FUSELAGE GROUND REPAIR OR REPLACE WIRE AS REQUIRED
1
NO
WITH 33
REPLACE CABLE ADAPTER 136A3
NO
LOWER ELEC PANEL IN OVERHEAD PANEL CHECK FOR 28 VDC BETWEEN TERM 5 (+) OF APU SWITCH AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN TERM 4 (+) OF APU SW AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN TERM B2 (+) OF APU FAULT RELAY AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W697-136-22 OR W668-130-22 BETWEEN ESU AND SPLICE. REPAIR OR REPLACE WIRE AS REQUIRED.
1
NO
LOCATE OPEN IN WIRE W645-301-22 OR W697-170-22 BETWEEN SPLICE AND OVERHEAD PANEL. REPAIR OR REPLACE AS REQUIRED.
1
NO
REPLACE APU SWITCH.
NO
REMOVE ELECTRICAL POWER. OPEN APU CONT NORM AND APU CONT EMERG CIRCUIT BREAKERS. OPEN NO. 1 PDP. PERFORM DIODE TEST ON 136CR1 AND 136CR2 ON TB3. ARE DIODES OK?
1
YES
LOCATE OPEN WIRE W559-318-22, W645-300-22, OR W550-173-22. REPAIR OR REPLACE AS REQUIRED.
1
NO
REPLACE DIODES.
1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

END OF TASK

15-2.9 APU FUEL BOOST PUMP CANNOT BE HEARD OPERATING BEFORE APU SWITCH SET TO START

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

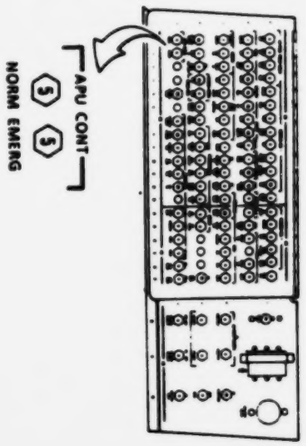
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

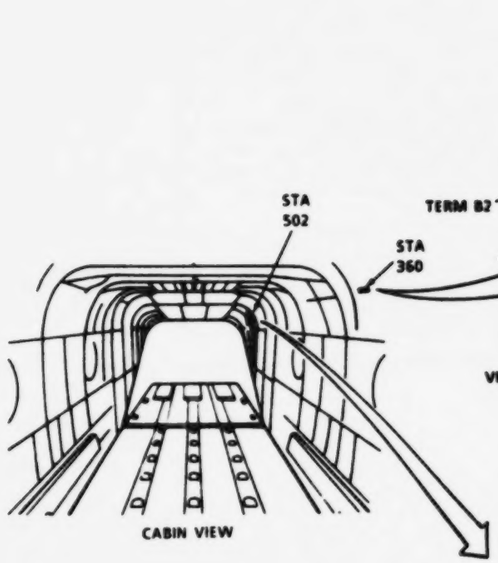
Materials:
None

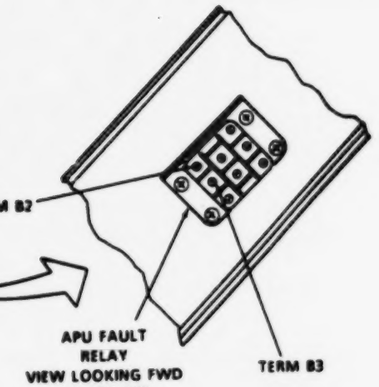
Personnel Required:
Aircraft Electrician (2)

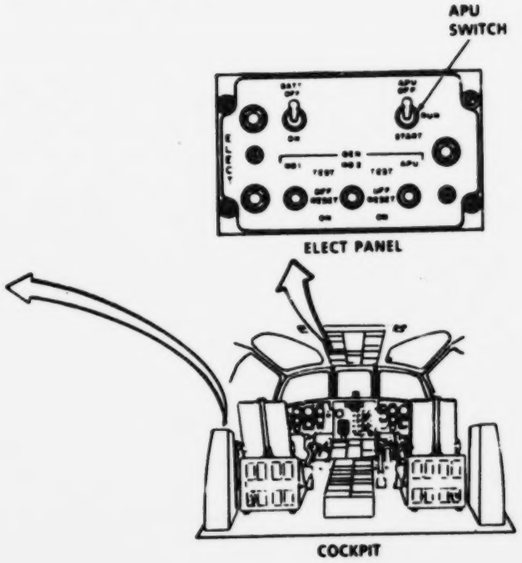
References:
TM 55-1520-240-23

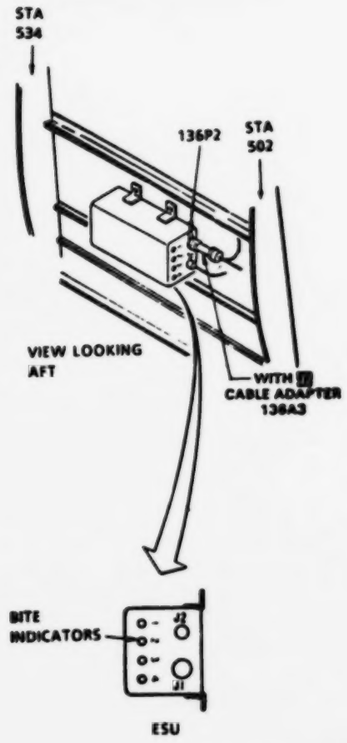
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off











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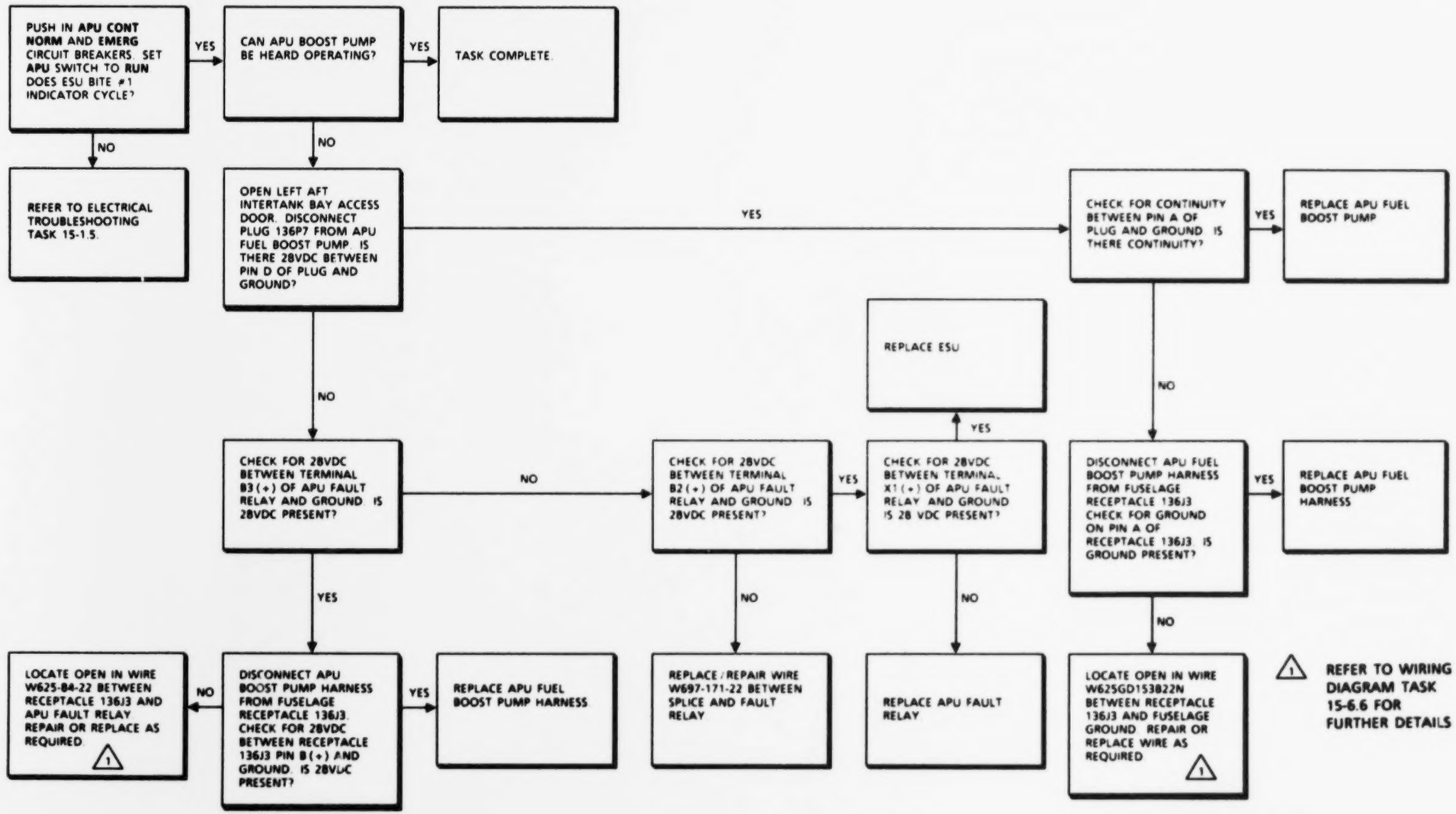
15-2.9 APU FUEL BOOST PUMP CANNOT BE HEARD OPERATING BEFORE APU SWITCH SET TO START (CONTINUED)


PUSH IN APU CONT NORM AND EMERG CIRCUIT BREAKERS. SET APU SWITCH TO RUN DOES ESU BITE #1 INDICATOR CYCLE?
YES
CAN APU BOOST PUMP BE HEARD OPERATING?
YES
TASK COMPLETE.
NO
NO
REFER TO ELECTRICAL TROUBLESHOOTING TASK 15-1.5.
OPEN LEFT AFT INTERTANK BAY ACCESS DOOR. DISCONNECT PLUG 136P7 FROM APU FUEL BOOST PUMP. IS THERE 28VDC BETWEEN PIN D OF PLUG AND GROUND?
YES
CHECK FOR CONTINUITY BETWEEN PIN A OF PLUG AND GROUND. IS THERE CONTINUITY?
YES
REPLACE APU FUEL BOOST PUMP
REPLACE ESU
NO
NO
YES
CHECK FOR 28VDC BETWEEN TERMINAL B3 (+) OF APU FAULT RELAY AND GROUND. IS 28VDC PRESENT?
NO
CHECK FOR 28VDC BETWEEN TERMINAL B2 (+) OF APU FAULT RELAY AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN TERMINAL X1 (+) OF APU FAULT RELAY AND GROUND IS 28 VDC PRESENT?
DISCONNECT APU FUEL BOOST PUMP HARNESS FROM FUSELAGE RECEPTACLE 136J3. CHECK FOR GROUND ON PIN A OF RECEPTACLE 136J3. IS GROUND PRESENT?
YES
REPLACE APU FUEL BOOST PUMP HARNESS
YES
NO
NO
NO
LOCATE OPEN IN WIRE W625-84-22 BETWEEN RECEPTACLE 136J3 AND APU FAULT RELAY. REPAIR OR REPLACE AS REQUIRED. 1
NO
DISCONNECT APU BOOST PUMP HARNESS FROM FUSELAGE RECEPTACLE 136J3. CHECK FOR 28VDC BETWEEN RECEPTACLE 136J3 PIN B (+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE APU FUEL BOOST PUMP HARNESS
REPLACE/REPAIR WIRE W697-171-22 BETWEEN SPLICE AND FAULT RELAY
REPLACE APU FAULT RELAY
LOCATE OPEN IN WIRE W625GD153B22N BETWEEN RECEPTACLE 136J3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED. 1
1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

END OF TASK

15-2.10 APU DOES NOT MOTOR WHEN APU SWITCH IS SET TO START

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

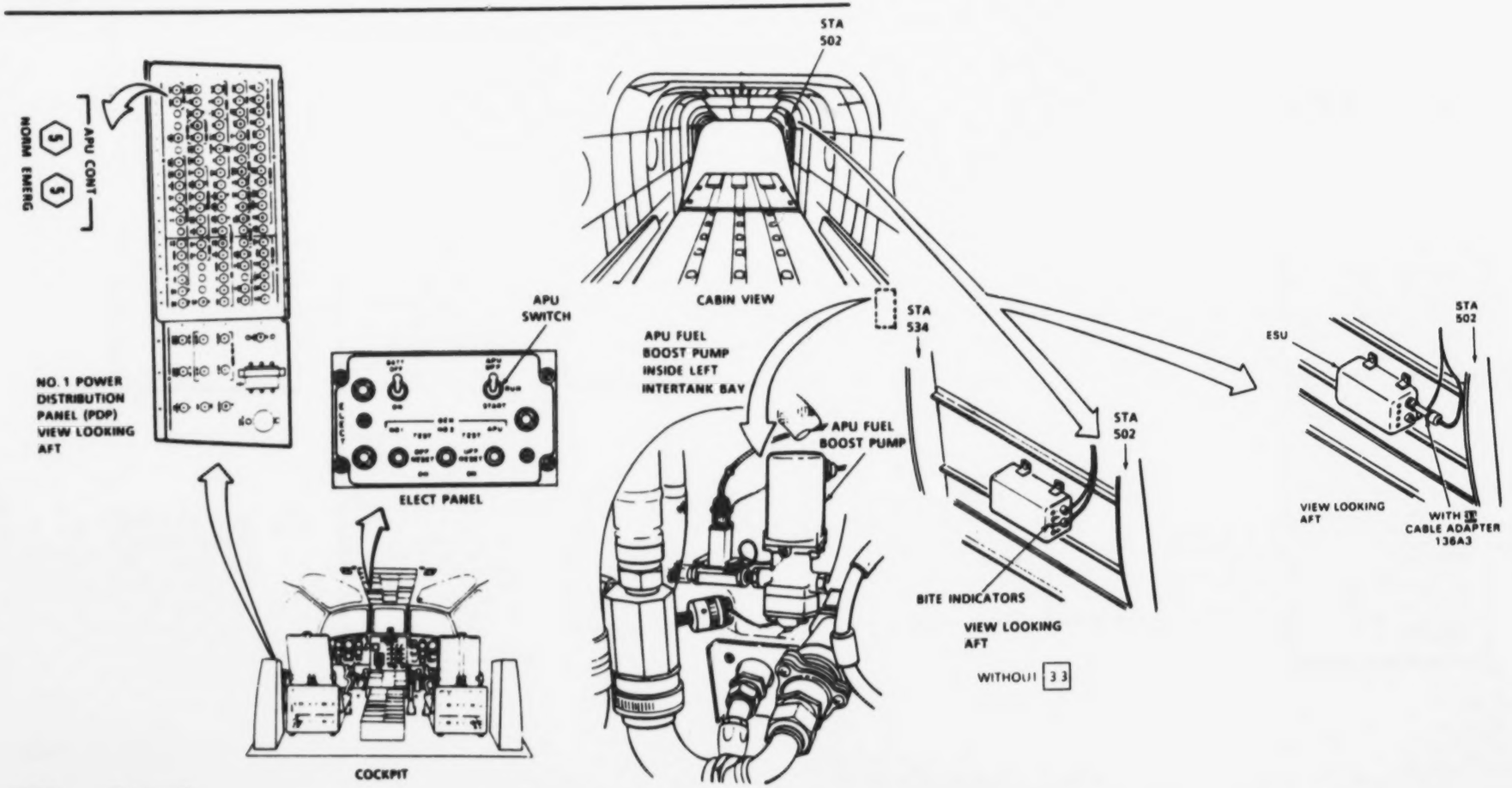
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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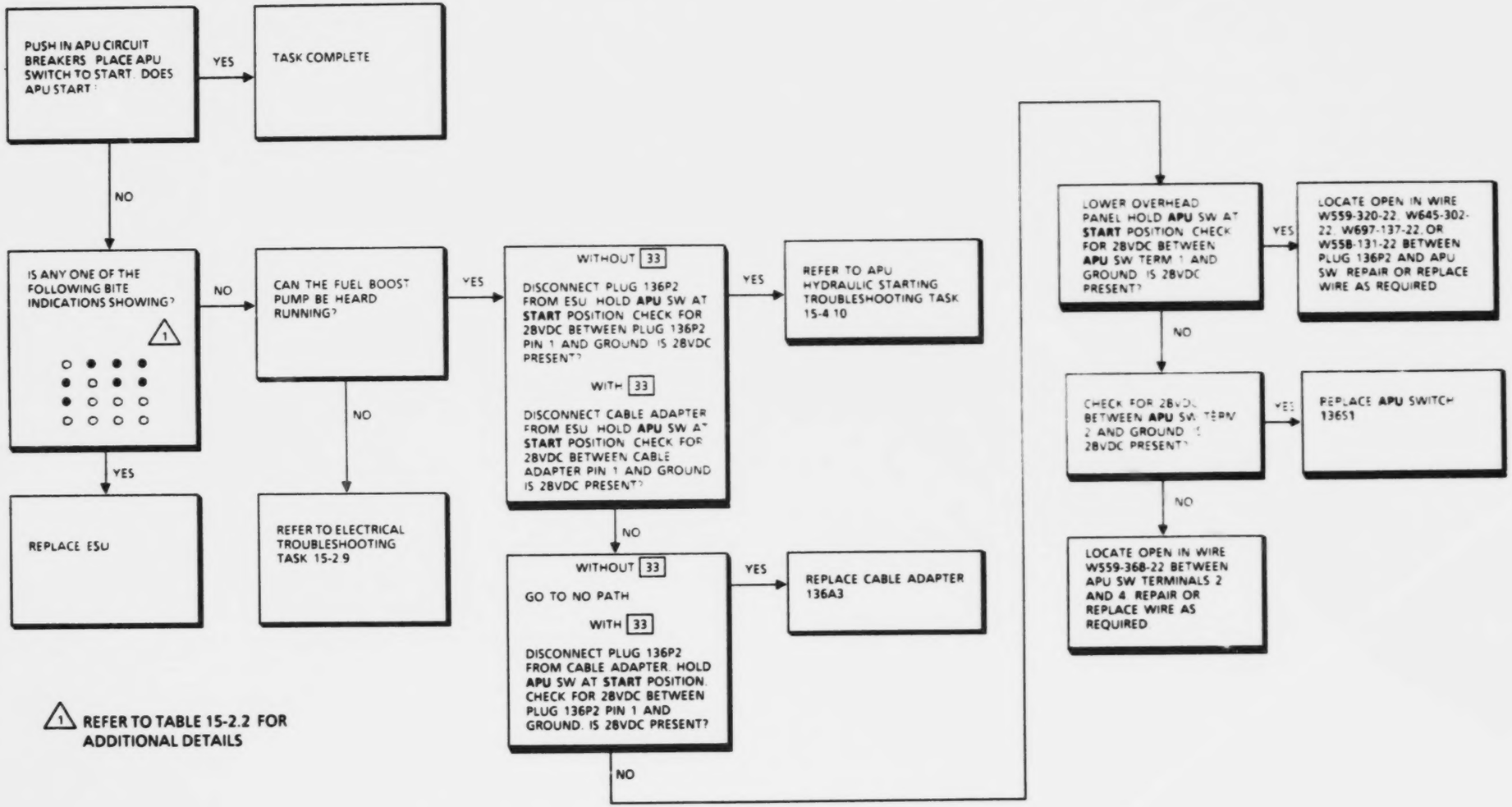
15-2.10 APU DOES NOT MOTOR WHEN APU SWITCH IS SET TO START (CONTINUED)


PUSH IN APU CIRCUIT BREAKERS. PLACE APU SWITCH TO START. DOES APU START?
YES
TASK COMPLETE
NO
IS ANY ONE OF THE FOLLOWING BITE INDICATIONS SHOWING? 1
NO
CAN THE FUEL BOOST PUMP BE HEARD RUNNING?
YES
NO
YES
REPLACE ESU
REFER TO ELECTRICAL TROUBLESHOOTING TASK 15-2.9
WITHOUT 33
DISCONNECT PLUG 136P2 FROM ESU. HOLD APU SW AT START POSITION. CHECK FOR 28VDC BETWEEN PLUG 136P2 PIN 1 AND GROUND. IS 28VDC PRESENT?
YES
REFER TO APU HYDRAULIC STARTING TROUBLESHOOTING TASK 15-4.10
WITH 33
DISCONNECT CABLE ADAPTER FROM ESU. HOLD APU SW AT START POSITION. CHECK FOR 28VDC BETWEEN CABLE ADAPTER PIN 1 AND GROUND. IS 28VDC PRESENT?
NO
WITHOUT 33
GO TO NO PATH
WITH 33
DISCONNECT PLUG 136P2 FROM CABLE ADAPTER. HOLD APU SW AT START POSITION. CHECK FOR 28VDC BETWEEN PLUG 136P2 PIN 1 AND GROUND. IS 28VDC PRESENT?
YES
REPLACE CABLE ADAPTER 136A3
NO
LOWER OVERHEAD PANEL. HOLD APU SW AT START POSITION. CHECK FOR 28VDC BETWEEN APU SW TERM 1 AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-320-22, W645-302-22, W697-137-22, OR W558-131-22 BETWEEN PLUG 136P2 AND APU SW. REPAIR OR REPLACE WIRE AS REQUIRED
NO
CHECK FOR 28VDC BETWEEN APU SW TERM 2 AND GROUND. IS 28VDC PRESENT?
YES
REPLACE APU SWITCH 13651
NO
LOCATE OPEN IN WIRE W559-368-22 BETWEEN APU SW TERMINALS 2 AND 4. REPAIR OR REPLACE WIRE AS REQUIRED

1 REFER TO TABLE 15-2.2 FOR ADDITIONAL DETAILS

END OF TASK

15-2.11 APU ON CAPSULE GOES OUT (APU SHUTS DOWN) WHEN APU CONT CIRCUIT BREAKER OPENED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

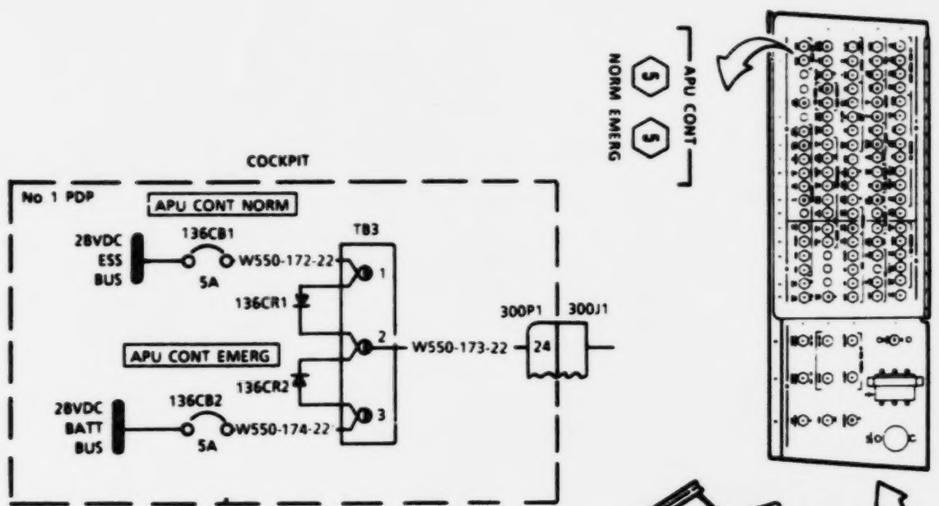
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

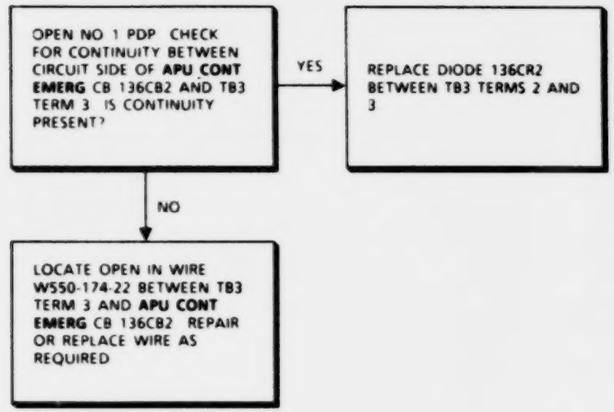
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

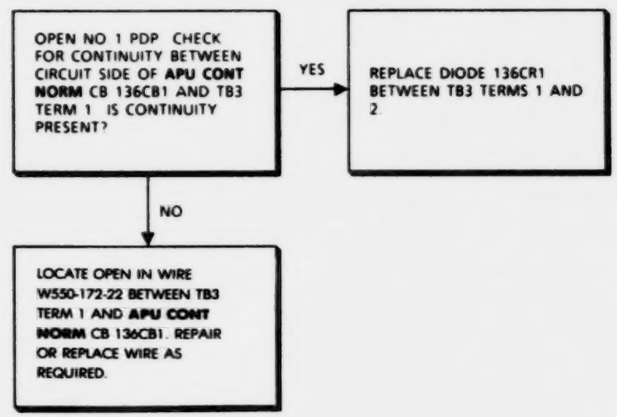
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



APU ON CAPSULE GOES OUT (APU SHUTS DOWN) WHEN APU CONT "EMERG" CIRCUIT BREAKER OPENED


OPEN NO 1 PDP CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF APU CONT EMERG CB 136CB2 AND TB3 TERM 3 IS CONTINUITY PRESENT?
YES
REPLACE DIODE 136CR2 BETWEEN TB3 TERMS 2 AND 3
NO
LOCATE OPEN IN WIRE W550-174-22 BETWEEN TB3 TERM 3 AND APU CONT EMERG CB 136CB2 REPAIR OR REPLACE WIRE AS REQUIRED

APU ON CAPSULE GOES OUT (APU SHUTS DOWN) WHEN APU CONT "NORM" CIRCUIT BREAKER OPENED


OPEN NO 1 PDP CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF APU CONT NORM CB 136CB1 AND TB3 TERM 1 IS CONTINUITY PRESENT?
YES
REPLACE DIODE 136CR1 BETWEEN TB3 TERMS 1 AND 2.
NO
LOCATE OPEN IN WIRE W550-172-22 BETWEEN TB3 TERM 1 AND APU CONT NORM CB 136CB1. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

15-2.12 APU DOES NOT STOP. ESU BITE INDICATES ● ● ● ●

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
Cloth (E120)
Tape (E385)

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

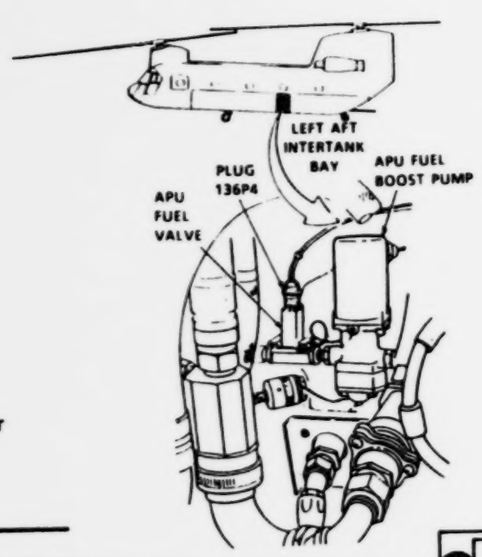
References:
TM 55-1520-240-23
TM 55-2835-205-23

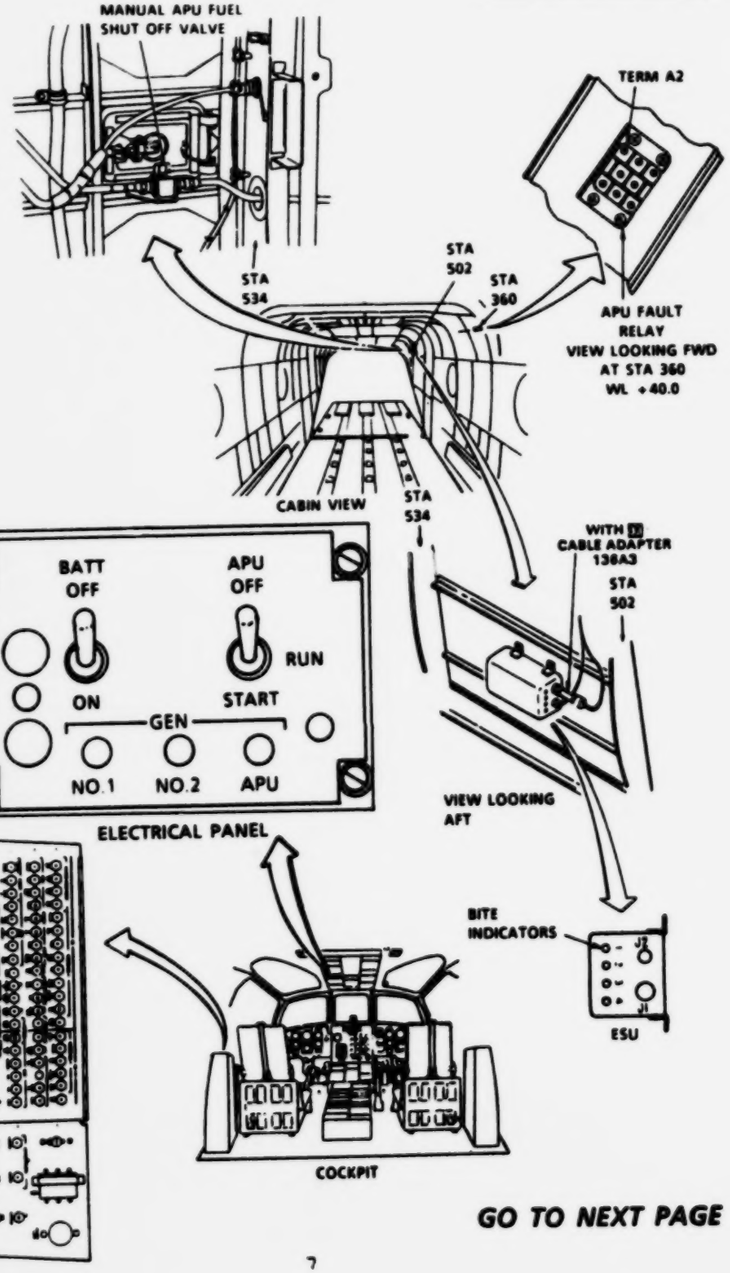
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

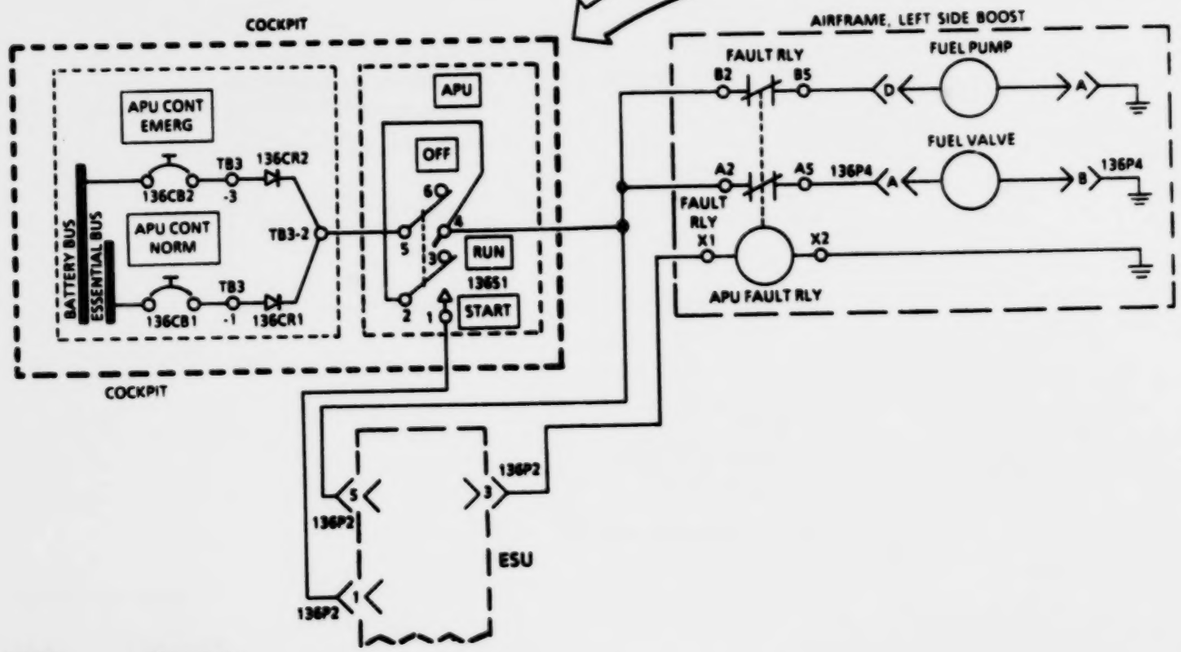
General Safety Instructions:

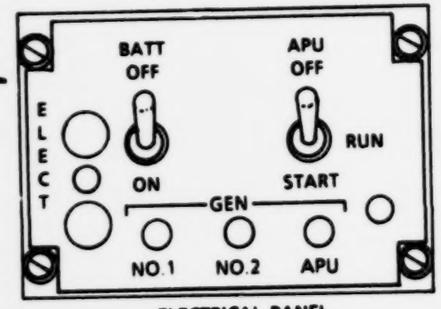
WARNING

All regulations and instructions for handling fuels shall be strictly observed.

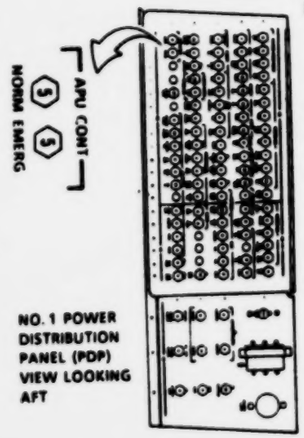








ELECTRICAL PANEL



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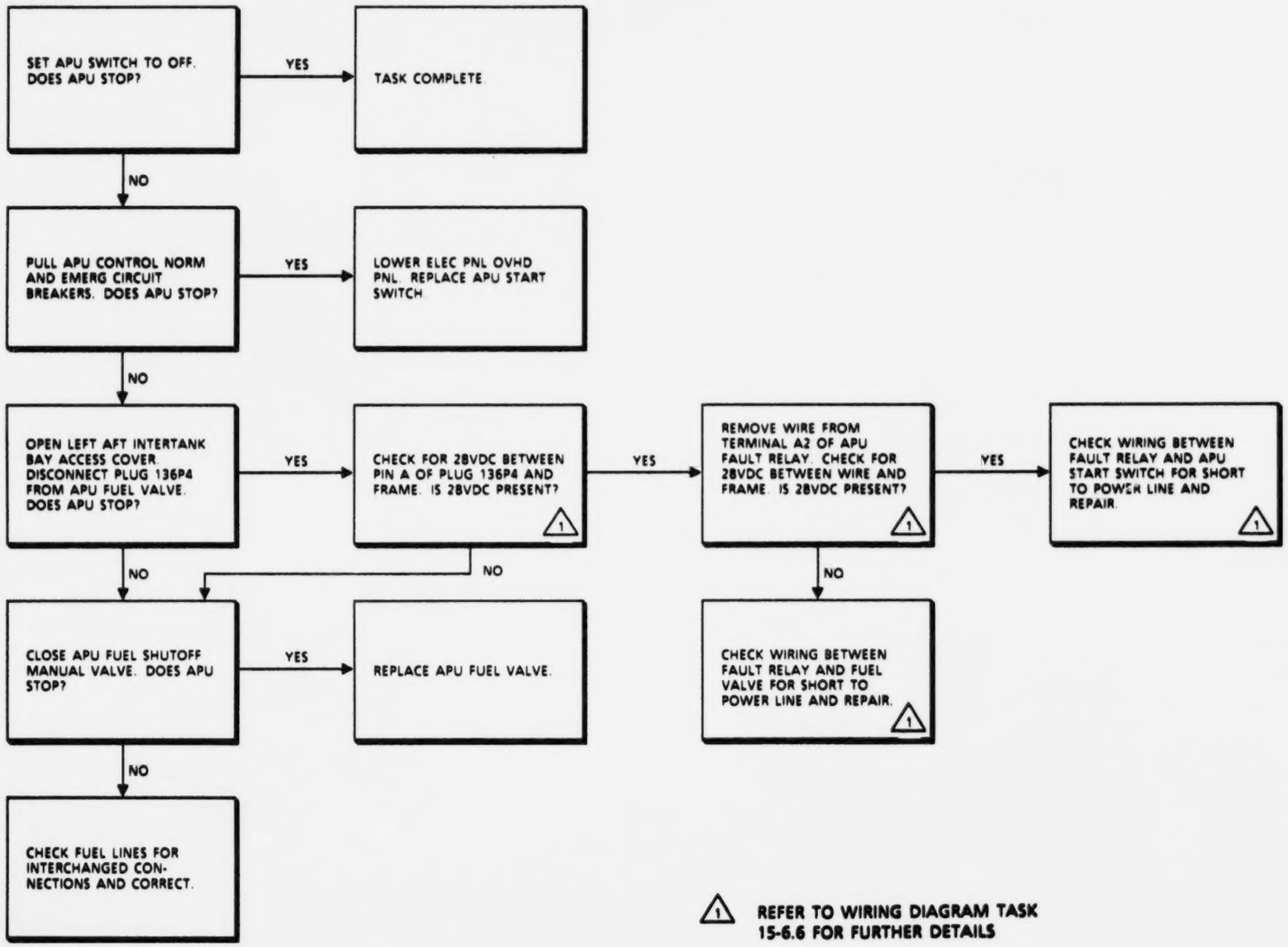
15-2.12 APU DOES NOT STOP. ESU BITE INDICATES ● ● ● ● (CONTINUED)


SET APU SWITCH TO OFF. DOES APU STOP?
YES
TASK COMPLETE
NO
PULL APU CONTROL NORM AND EMERG CIRCUIT BREAKERS. DOES APU STOP?
YES
LOWER ELEC PNL OVHD PNL. REPLACE APU START SWITCH
NO
OPEN LEFT AFT INTERTANK BAY ACCESS COVER. DISCONNECT PLUG 136P4 FROM APU FUEL VALVE. DOES APU STOP?
YES
CHECK FOR 28VDC BETWEEN PIN A OF PLUG 136P4 AND FRAME. IS 28VDC PRESENT? 1
YES
REMOVE WIRE FROM TERMINAL A2 OF APU FAULT RELAY. CHECK FOR 28VDC BETWEEN WIRE AND FRAME. IS 28VDC PRESENT? 1
YES
CHECK WIRING BETWEEN FAULT RELAY AND APU START SWITCH FOR SHORT TO POWER LINE AND REPAIR. 1
NO
NO
NO
CLOSE APU FUEL SHUTOFF MANUAL VALVE. DOES APU STOP?
YES
REPLACE APU FUEL VALVE.
NO
CHECK WIRING BETWEEN FAULT RELAY AND FUEL VALVE FOR SHORT TO POWER LINE AND REPAIR. 1
NO
CHECK FUEL LINES FOR INTERCHANGED CONNECTIONS AND CORRECT.

1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

END OF TASK

15-2.13 APU ON CAPSULE OUT WHEN APU OPERATING NORMALLY

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

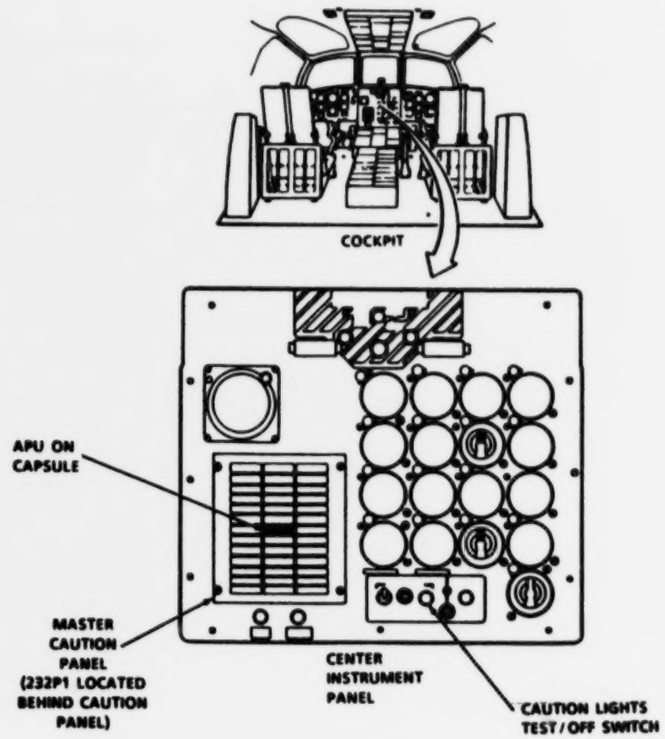
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

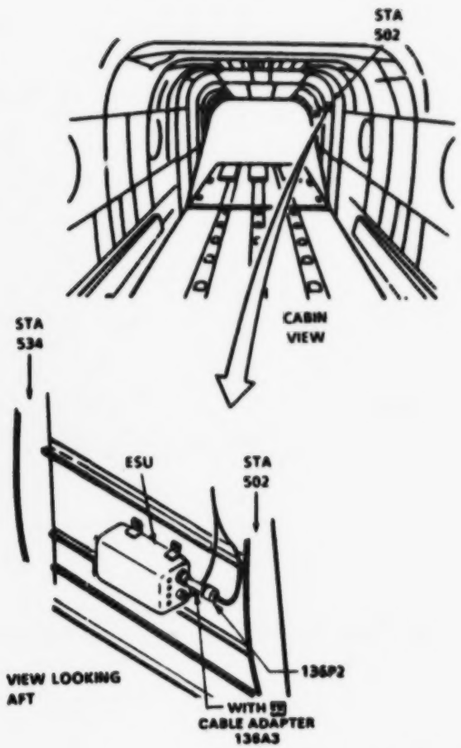
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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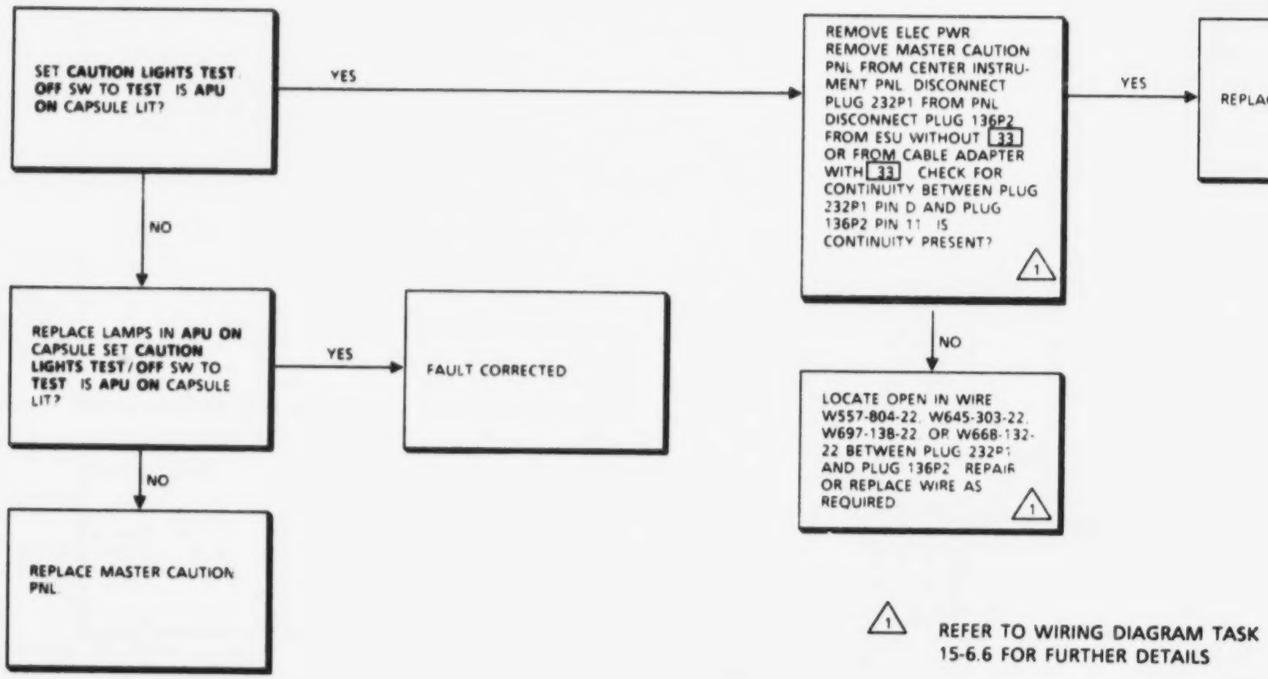
15-2.13 APU ON CAPSULE OUT WHEN APU OPERATING NORMALLY (CONTINUED)


SET CAUTION LIGHTS TEST OFF SW TO TEST IS APU ON CAPSULE LIT?
YES
NO
REMOVE ELEC PWR REMOVE MASTER CAUTION PNL FROM CENTER INSTRUMENT PNL DISCONNECT PLUG 232P1 FROM PNL DISCONNECT PLUG 136P2 FROM ESU WITHOUT 33 OR FROM CABLE ADAPTER WITH 33 CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN D AND PLUG 136P2 PIN 11 IS CONTINUITY PRESENT?
1
YES
REPLACE ESU
NO
LOCATE OPEN IN WIRE W557-804-22, W645-303-22, W697-138-22 OR W668-132-22 BETWEEN PLUG 232P1 AND PLUG 136P2 REPAIR OR REPLACE WIRE AS REQUIRED
1
REPLACE LAMPS IN APU ON CAPSULE SET CAUTION LIGHTS TEST/OFF SW TO TEST IS APU ON CAPSULE LIT?
YES
FAULT CORRECTED
NO
REPLACE MASTER CAUTION PNL

1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

END OF TASK

15-2.14 APU SHUTS DOWN WHEN GEN APU SWITCH PLACED TO ON. ESU BITE INDICATES ● ● ● ● (READY FOR SERVICE)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

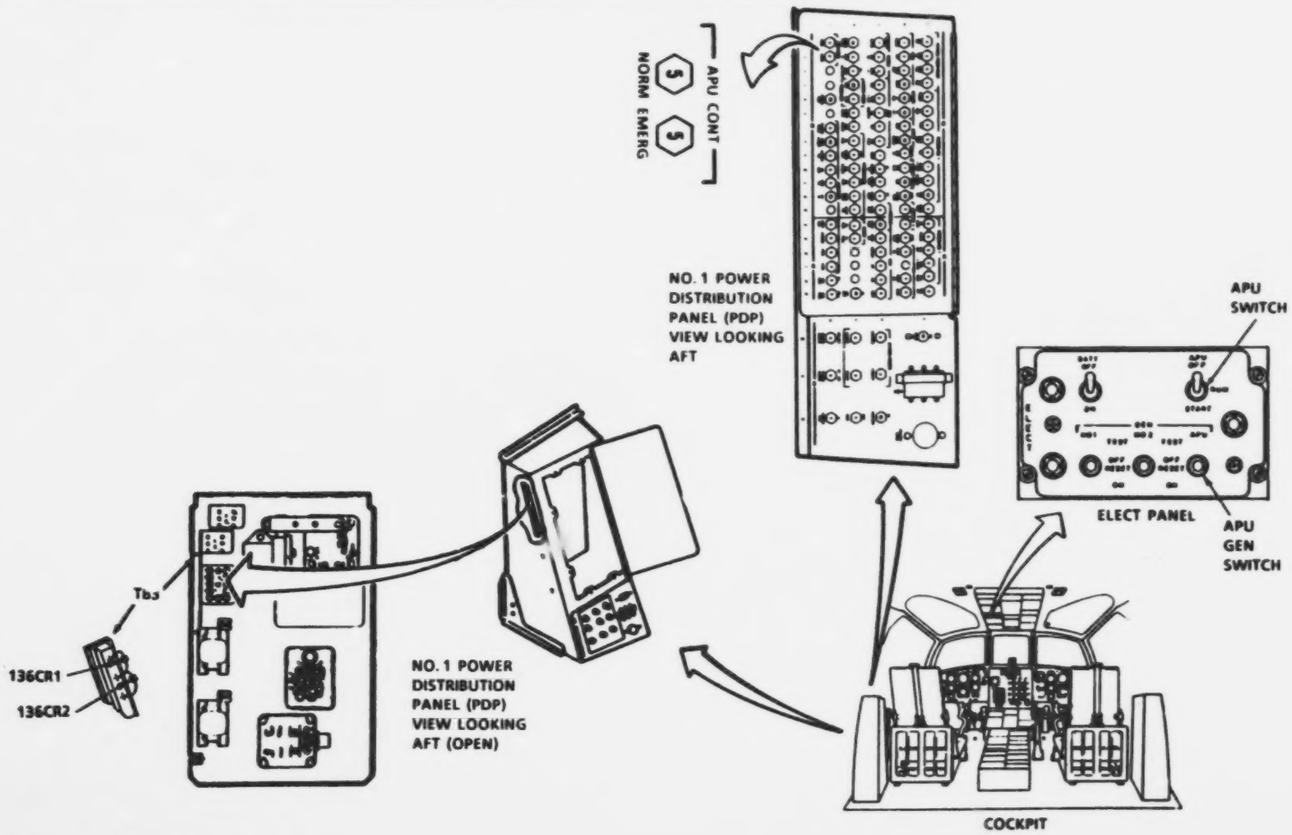
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

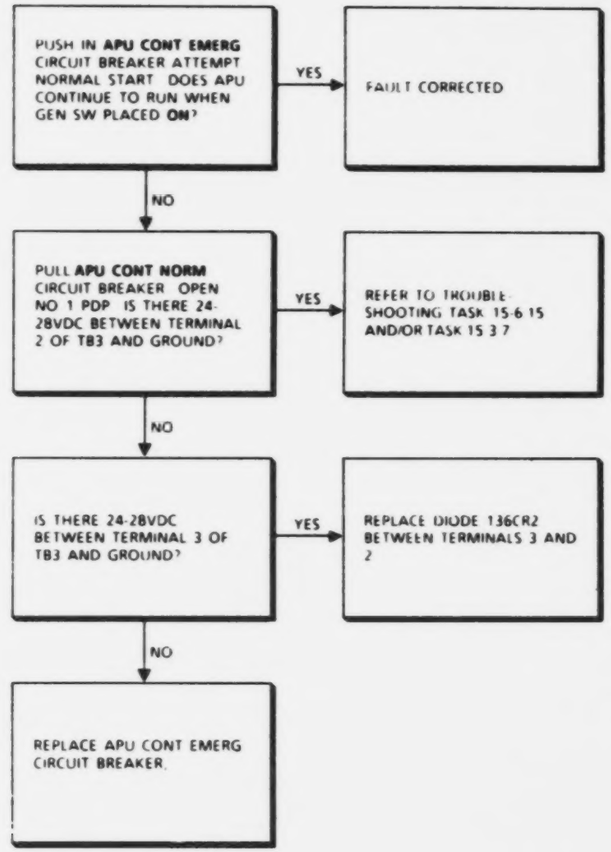
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off




PUSH IN APU CONT EMERG CIRCUIT BREAKER ATTEMPT NORMAL START DOES APU CONTINUE TO RUN WHEN GEN SW PLACED ON?
YES
FAULT CORRECTED
NO
PULL APU CONT NORM CIRCUIT BREAKER OPEN NO 1 PDP IS THERE 24-28VDC BETWEEN TERMINAL 2 OF TB3 AND GROUND?
YES
REFER TO TROUBLE-SHOOTING TASK 15-6 15 AND/OR TASK 15 3 7
NO
IS THERE 24-28VDC BETWEEN TERMINAL 3 OF TB3 AND GROUND?
YES
REPLACE DIODE 136CR2 BETWEEN TERMINALS 3 AND 2
NO
REPLACE APU CONT EMERG CIRCUIT BREAKER.

END OF TASK

15-2.15 APU SHUTS DOWN WHEN APU GEN SWITCH IS SET TO OFF. ESU BITE INDICATES ● ● ● ●

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

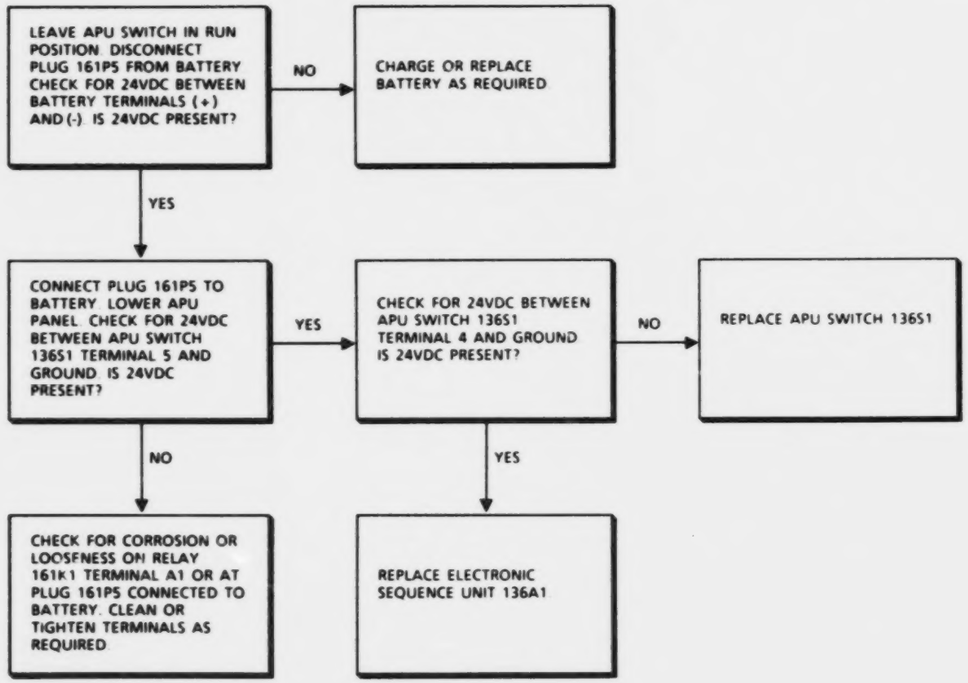
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

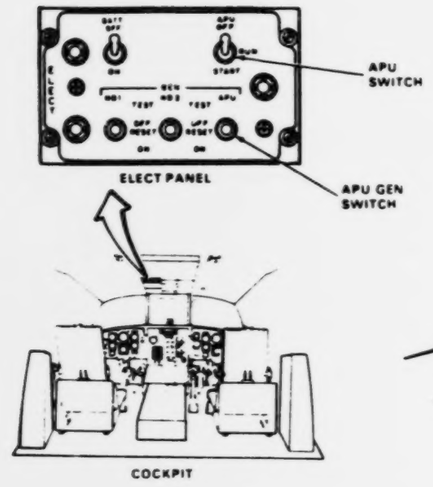
Materials:
None

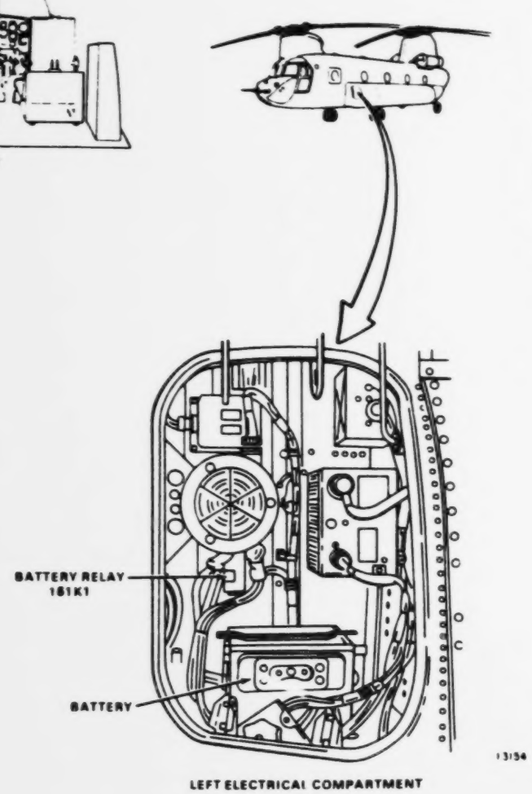
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


LEAVE APU SWITCH IN RUN POSITION DISCONNECT PLUG 161P5 FROM BATTERY CHECK FOR 24VDC BETWEEN BATTERY TERMINALS (+) AND (-) IS 24VDC PRESENT?
NO
CHARGE OR REPLACE BATTERY AS REQUIRED
YES
CONNECT PLUG 161P5 TO BATTERY. LOWER APU PANEL. CHECK FOR 24VDC BETWEEN APU SWITCH 136S1 TERMINAL 5 AND GROUND. IS 24VDC PRESENT?
YES
CHECK FOR 24VDC BETWEEN APU SWITCH 136S1 TERMINAL 4 AND GROUND IS 24VDC PRESENT?
NO
REPLACE APU SWITCH 136S1
NO
CHECK FOR CORROSION OR LOOSENESS ON RELAY 161K1 TERMINAL A1 OR AT PLUG 161P5 CONNECTED TO BATTERY. CLEAN OR TIGHTEN TERMINALS AS REQUIRED.
YES
REPLACE ELECTRONIC SEQUENCE UNIT 136A1





END OF TASK

15-3 APU FUEL SYSTEM

PARAGRAPH 15-3

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APU FUEL SYSTEM TROUBLESHOOTING

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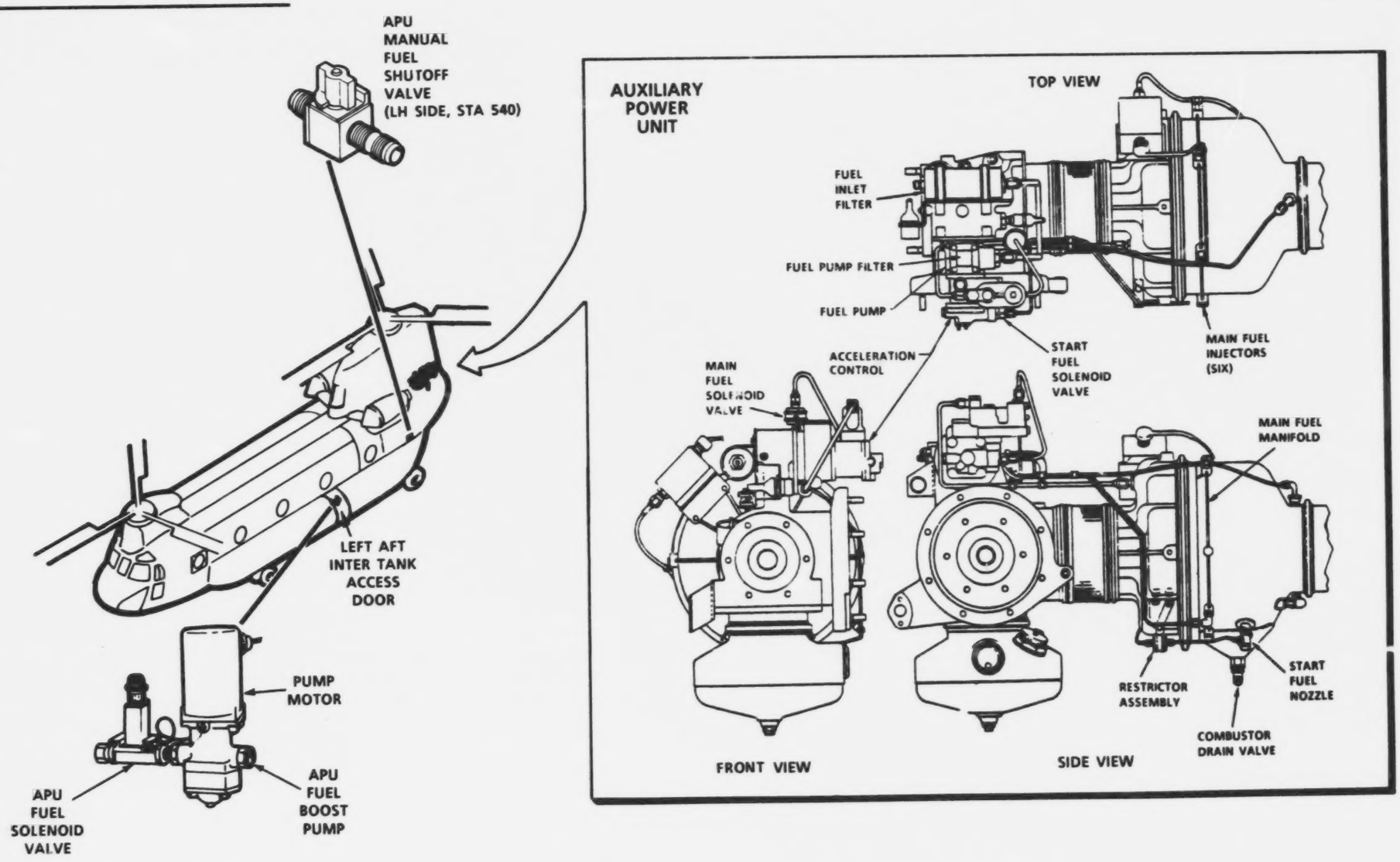
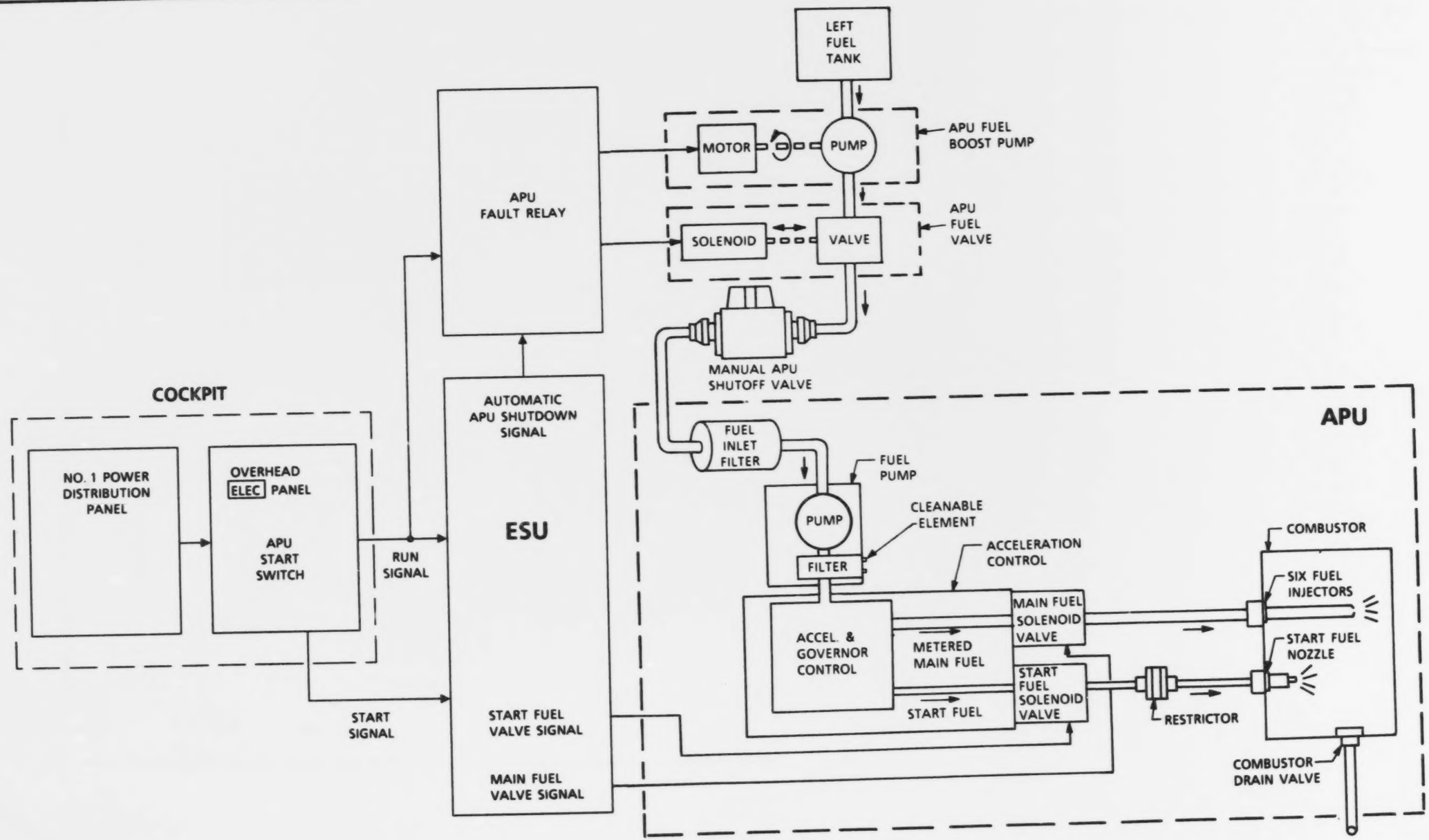
15-3 APU FUEL SYSTEM

15-3.1 APU FUEL SYSTEM COMPONENTS



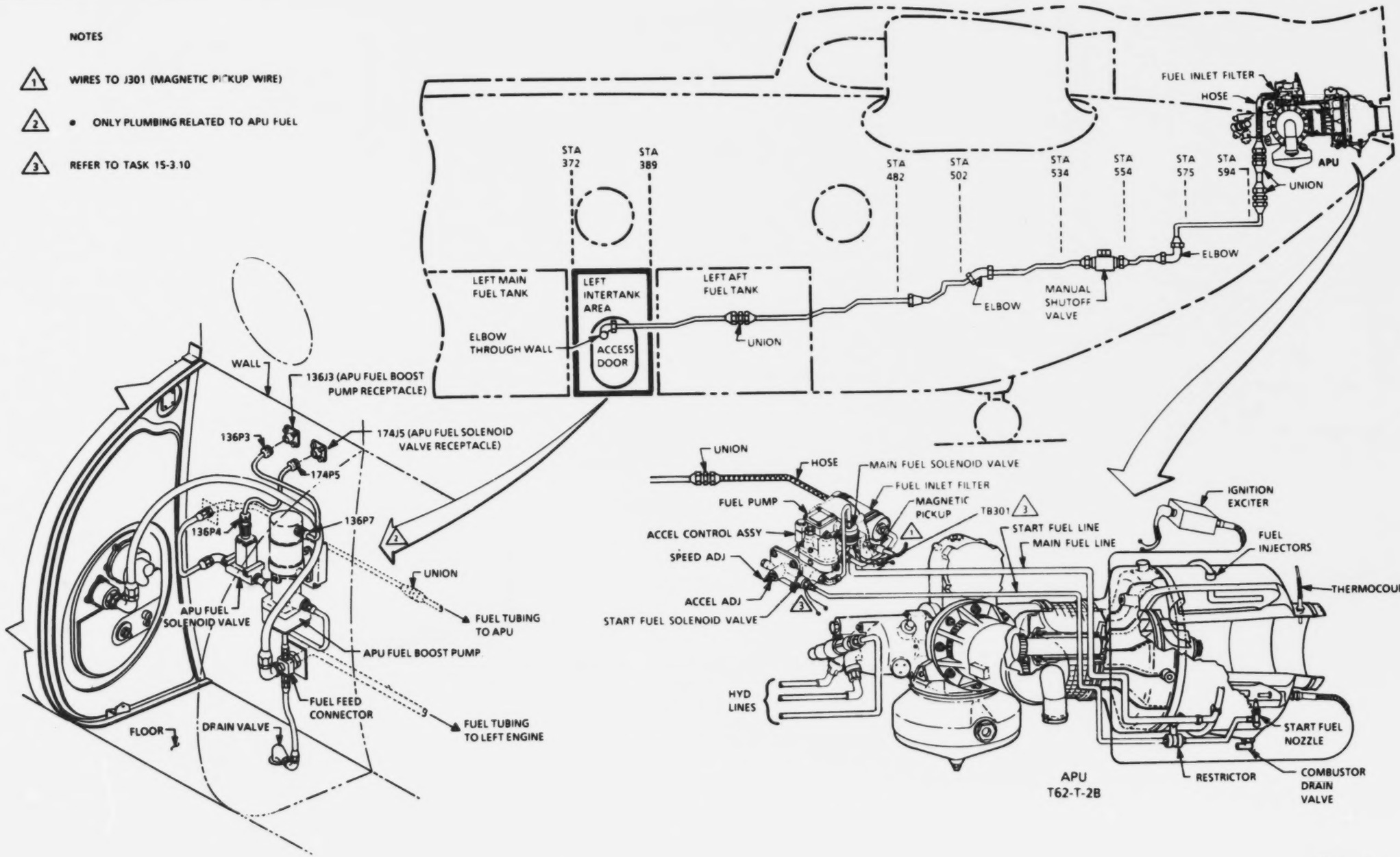
15-3.2 APU FUEL SYSTEM BLOCK DIAGRAM



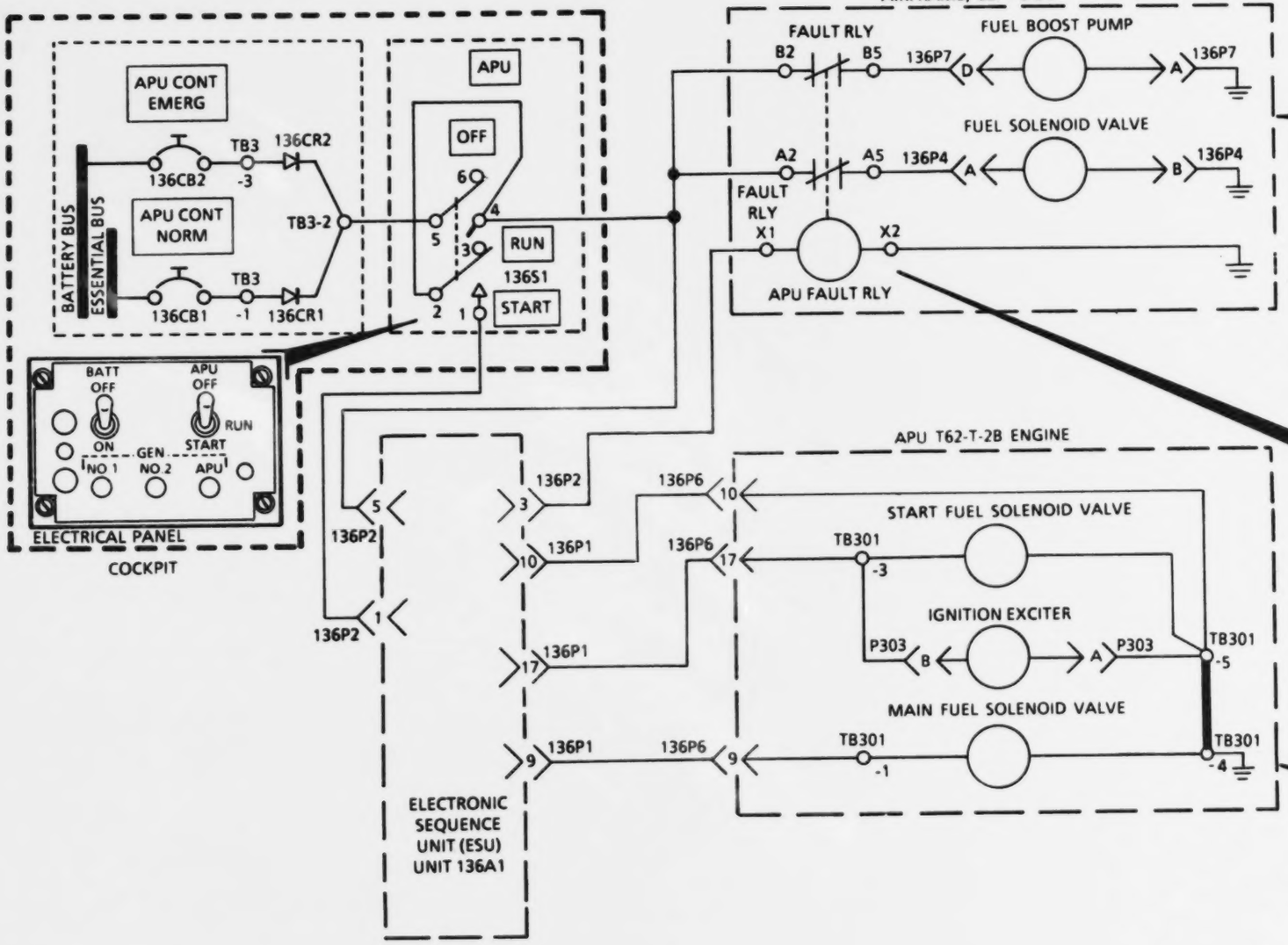
15-3.3 APU FUEL SYSTEM PIPING DIAGRAM

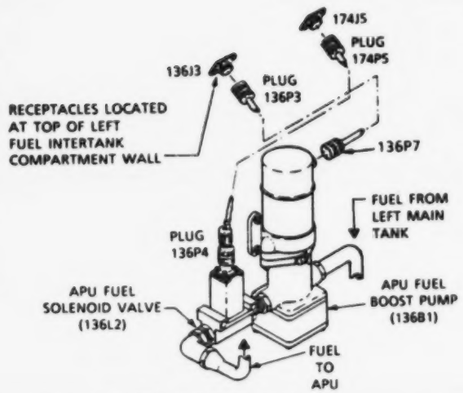
NOTES

1. WIRES TO J301 (MAGNETIC PICKUP WIRE)
2. • ONLY PLUMBING RELATED TO APU FUEL
3. REFER TO TASK 15-3.10

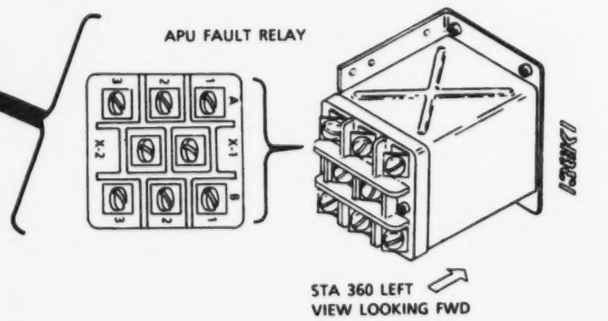


15-3.4 APU FUEL SYSTEM ELECTRICAL SCHEMATIC

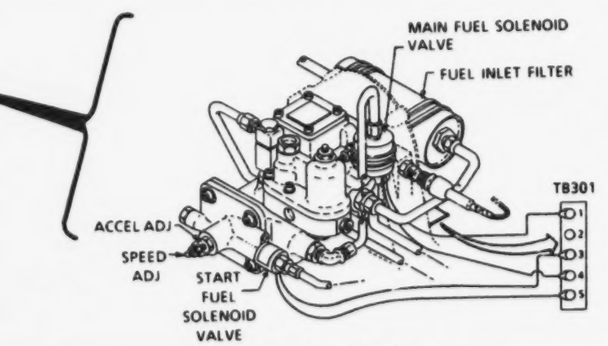




FUEL BOOST PUMP

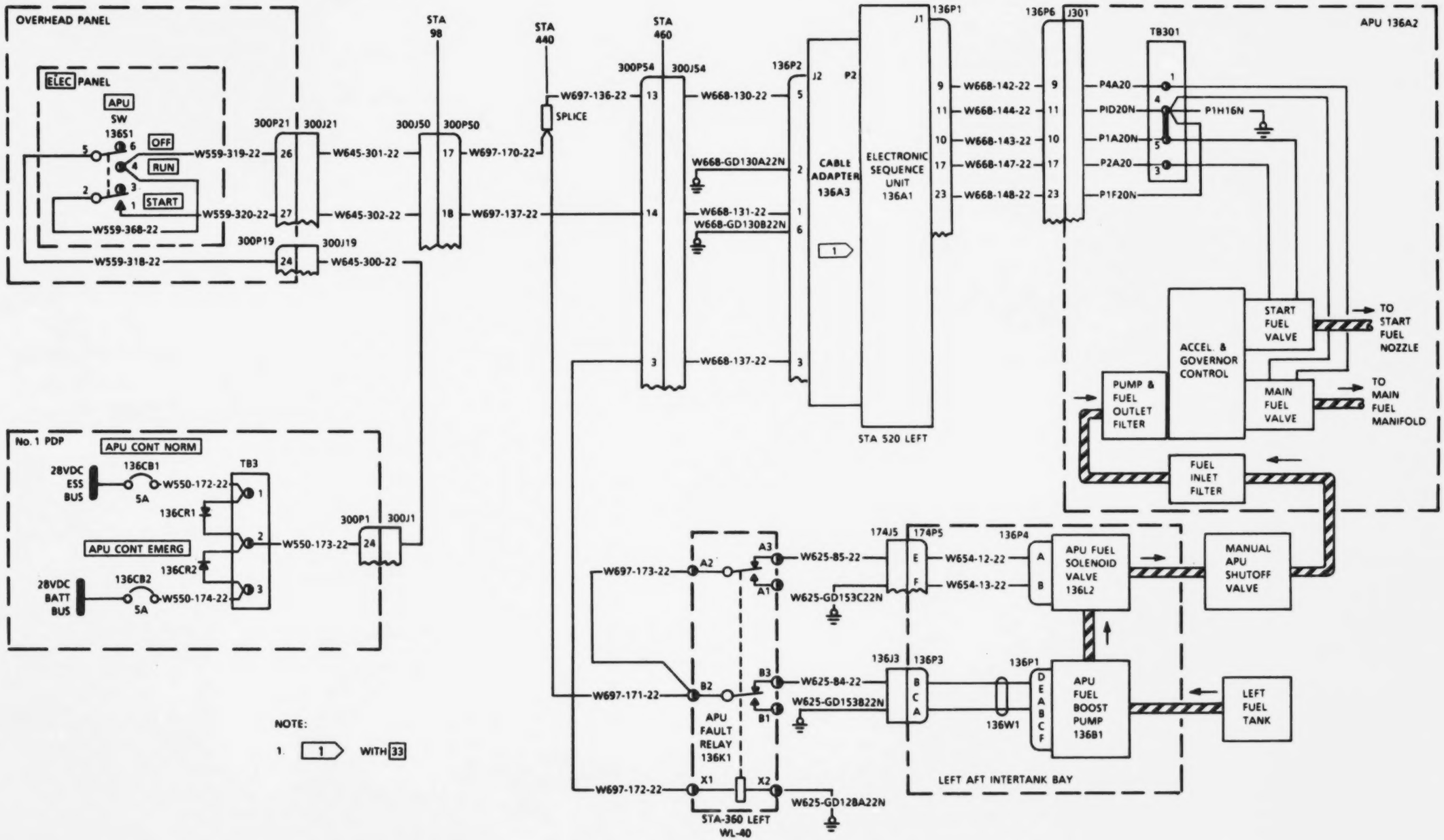


APU FAULT RELAY



APU FUEL CONTROL

15-3.5 APU FUEL SYSTEM WIRING DIAGRAM



NOTE:

1. [1] WITH [33]

15-3.6 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ● ● THEN ● ○ ○ ● (FAILURE TO START ; FUEL SYSTEM)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
Cloth (E120)
Tape (E385)

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

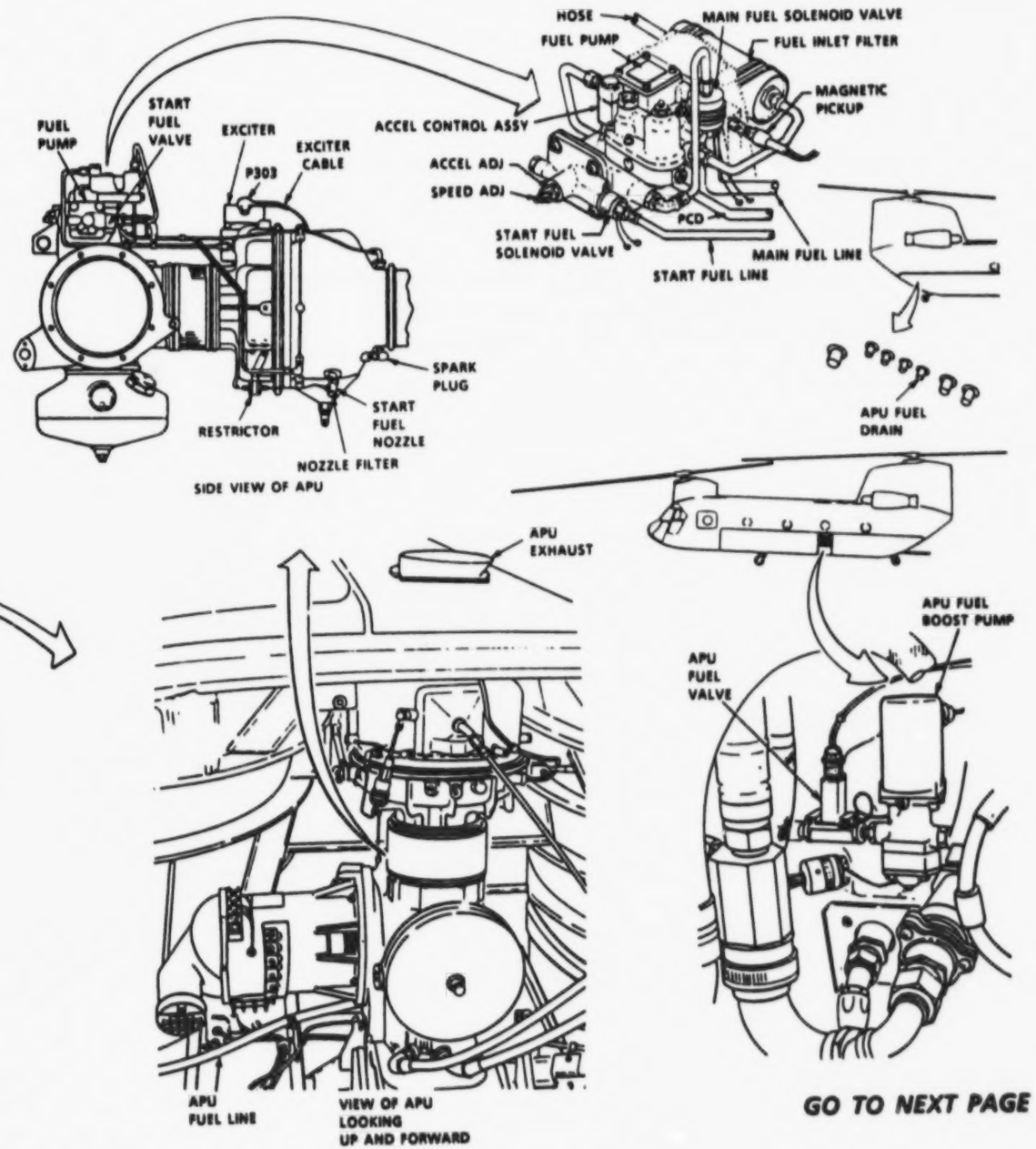
References:
TM 55-1520-240-23
TM 55-2835-205-23

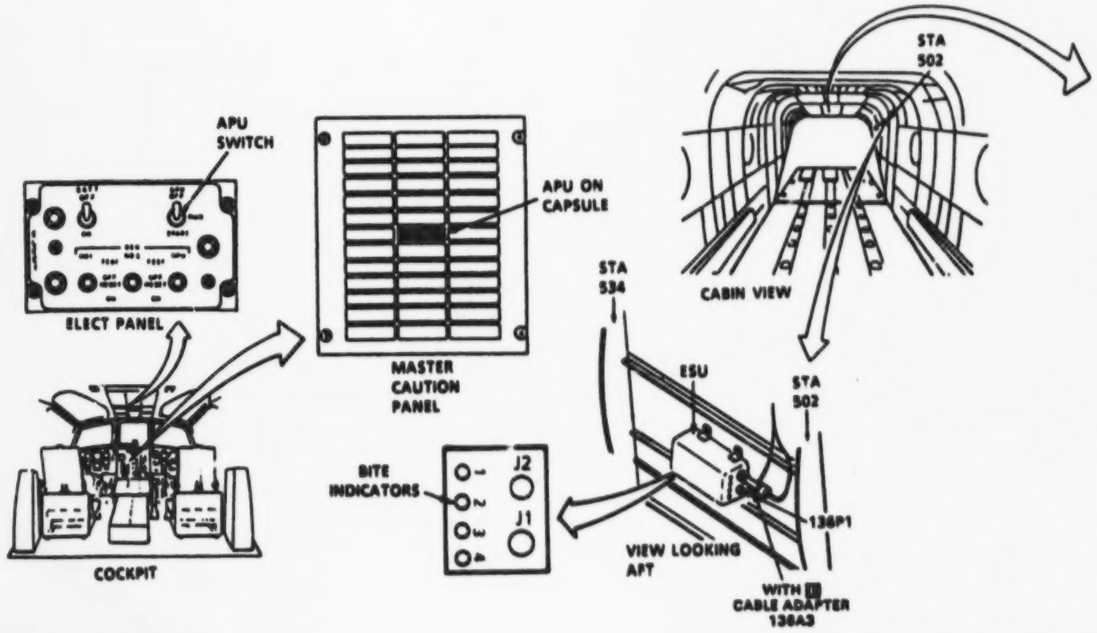
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

General Safety Instructions:

WARNING

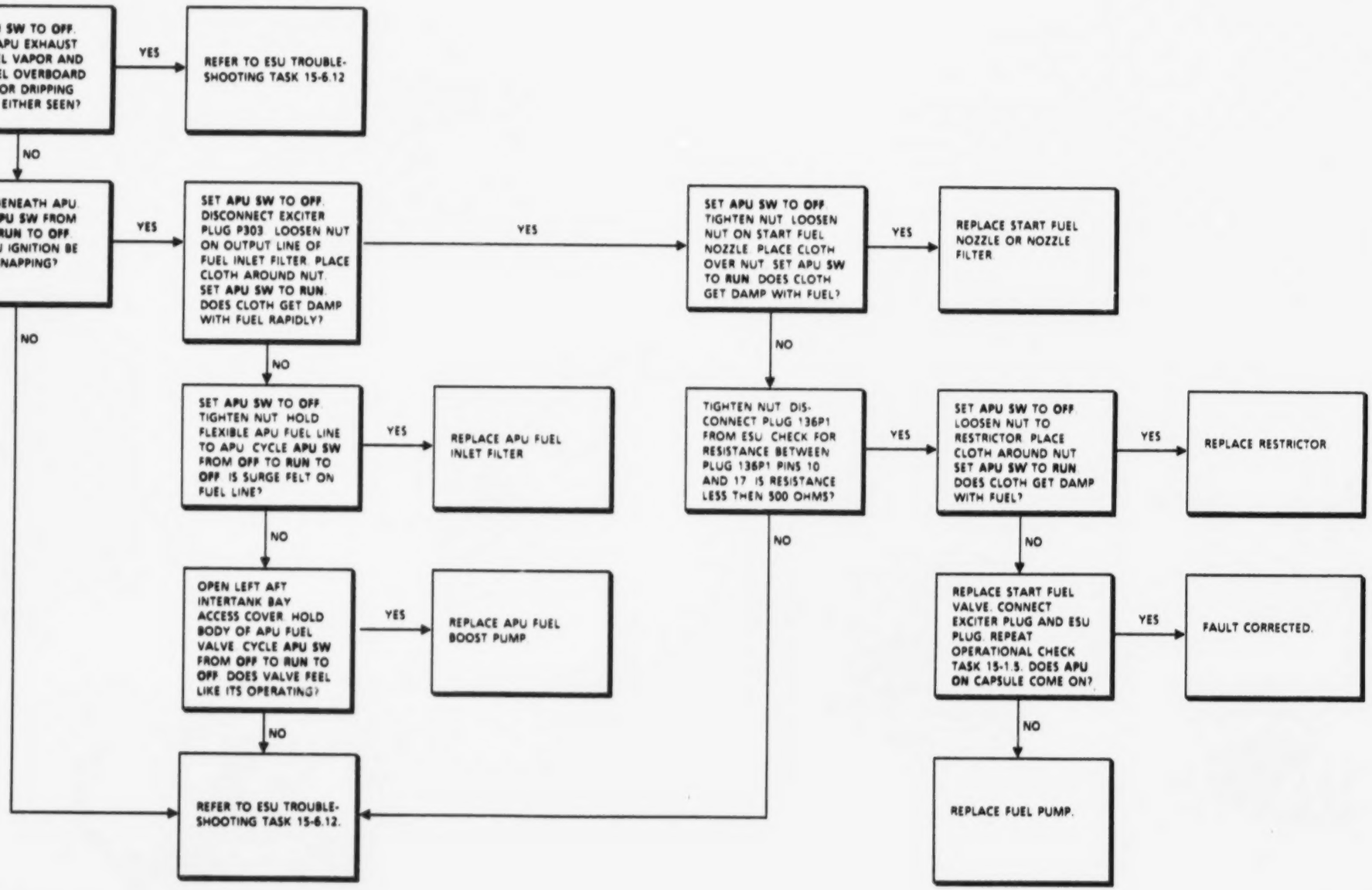
All regulations and instructions for handling fuels shall be strictly observed.





GO TO NEXT PAGE

15-3.6 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ● ● THEN ● ○ ○ ● (CONTINUED ; FUEL SYSTEM)


SET APU SW TO OFF. CHECK APU EXHAUST FOR FUEL VAPOR AND APU FUEL OVERBOARD DRAIN FOR DRIPPING FUEL. IS EITHER SEEN?
YES
REFER TO ESU TROUBLE-SHOOTING TASK 15-6.12
NO
STAND BENEATH APU. CYCLE APU SW FROM OFF TO RUN TO OFF. CAN APU IGNITION BE HEARD SNAPPING?
YES
SET APU SW TO OFF. DISCONNECT EXCITER PLUG P303. LOOSEN NUT ON OUTPUT LINE OF FUEL INLET FILTER. PLACE CLOTH AROUND NUT. SET APU SW TO RUN. DOES CLOTH GET DAMP WITH FUEL RAPIDLY?
YES
SET APU SW TO OFF. TIGHTEN NUT. LOOSEN NUT ON START FUEL NOZZLE. PLACE CLOTH OVER NUT. SET APU SW TO RUN. DOES CLOTH GET DAMP WITH FUEL?
YES
REPLACE START FUEL NOZZLE OR NOZZLE FILTER
NO
NO
SET APU SW TO OFF. TIGHTEN NUT. HOLD FLEXIBLE APU FUEL LINE TO APU. CYCLE APU SW FROM OFF TO RUN TO OFF. IS SURGE FELT ON FUEL LINE?
YES
REPLACE APU FUEL INLET FILTER
TIGHTEN NUT. DISCONNECT PLUG 136P1 FROM ESU. CHECK FOR RESISTANCE BETWEEN PLUG 136P1 PINS 10 AND 17. IS RESISTANCE LESS THEN 500 OHMS?
YES
SET APU SW TO OFF. LOOSEN NUT TO RESTRICTOR. PLACE CLOTH AROUND NUT. SET APU SW TO RUN. DOES CLOTH GET DAMP WITH FUEL?
YES
REPLACE RESTRICTOR
NO
NO
OPEN LEFT AFT INTERTANK BAY ACCESS COVER. HOLD BODY OF APU FUEL VALVE. CYCLE APU SW FROM OFF TO RUN TO OFF. DOES VALVE FEEL LIKE ITS OPERATING?
YES
REPLACE APU FUEL BOOST PUMP
REPLACE START FUEL VALVE. CONNECT EXCITER PLUG AND ESU PLUG. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
NO
REFER TO ESU TROUBLE-SHOOTING TASK 15-6.12.
REPLACE FUEL PUMP.

END OF TASK

15-3.7 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○○○● THEN ●○○● (FAILURE TO START)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

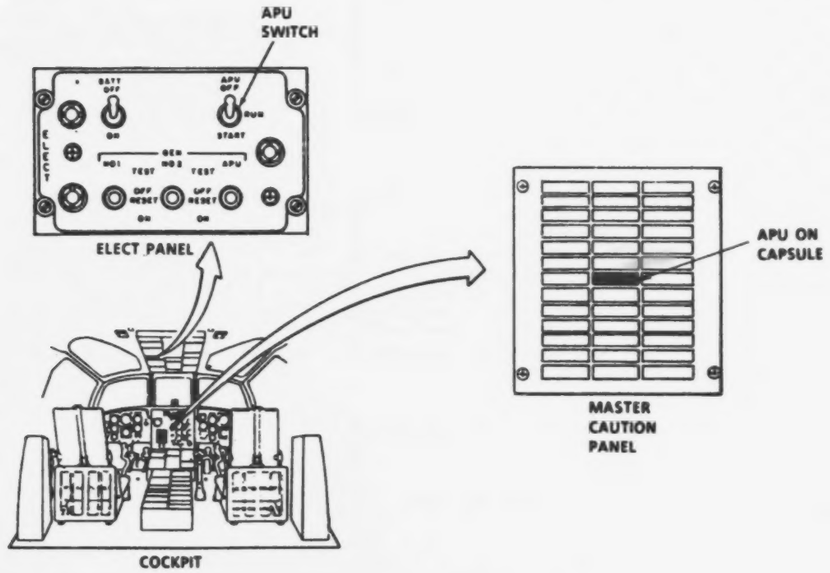
References:
TM 55-1520-240-23
TM 55-2835-203-23

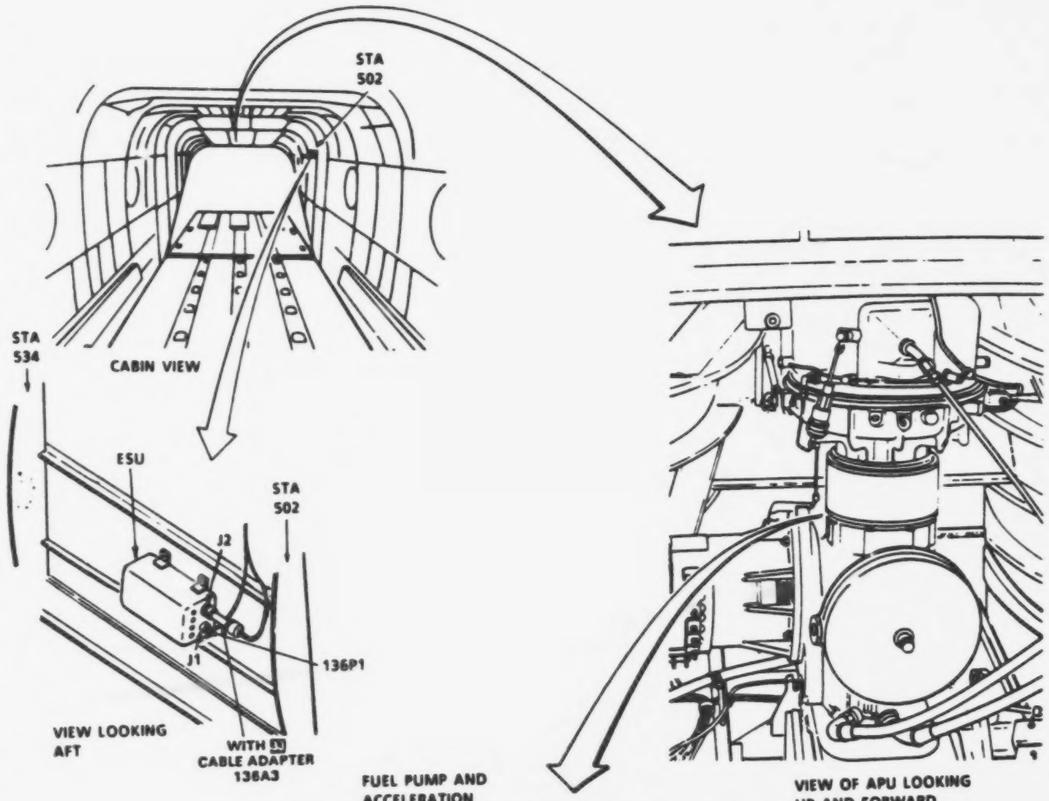
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

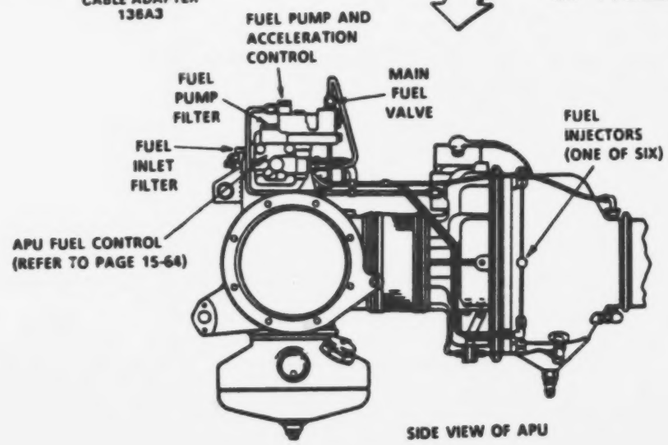
General Safety Instructions:

WARNING

All regulations and instructions for handling fuels shall be strictly observed.

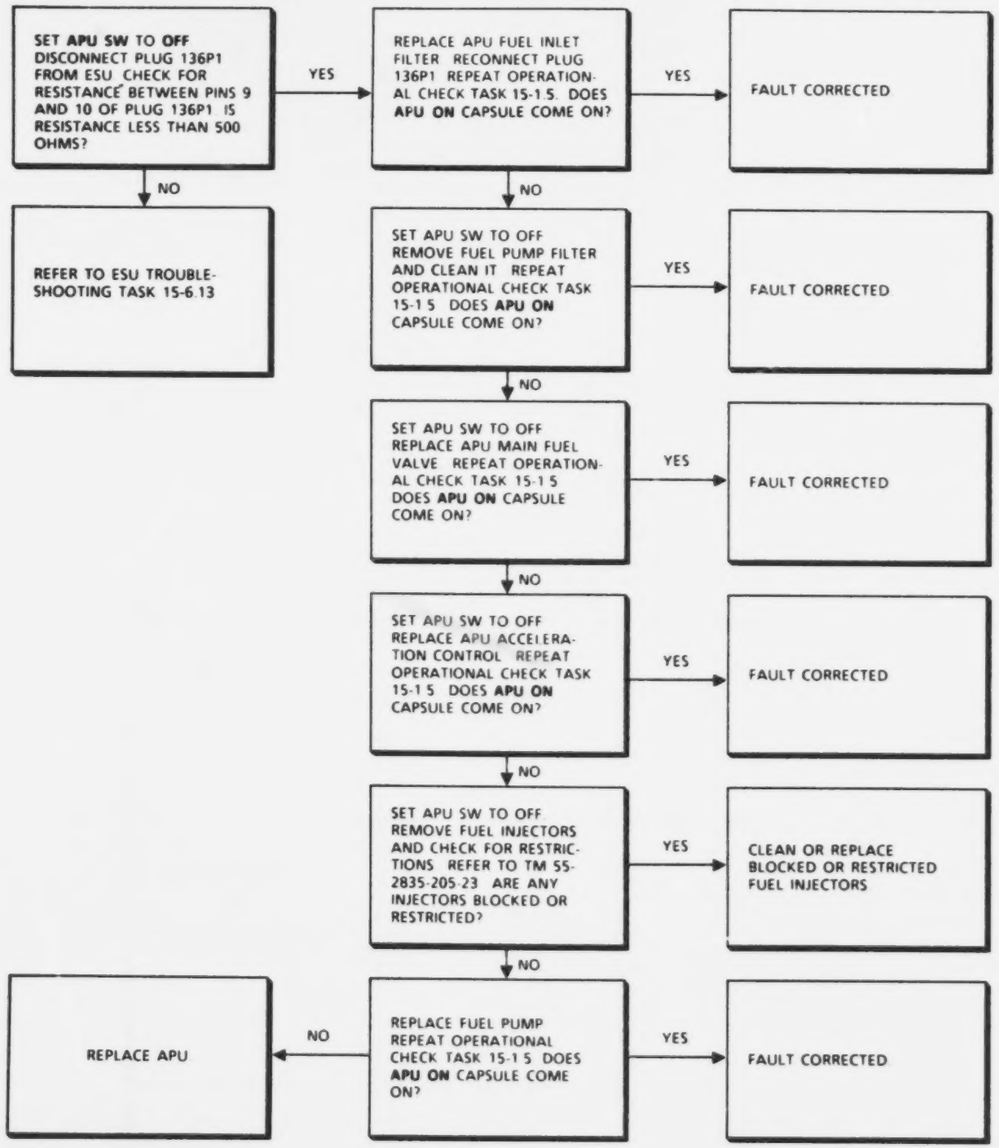





FUEL PUMP AND ACCELERATION CONTROL
FUEL PUMP FILTER
MAIN FUEL VALVE
FUEL INLET FILTER
FUEL INJECTORS (ONE OF SIX)
APU FUEL CONTROL (REFER TO PAGE 15-64)
SIDE VIEW OF APU

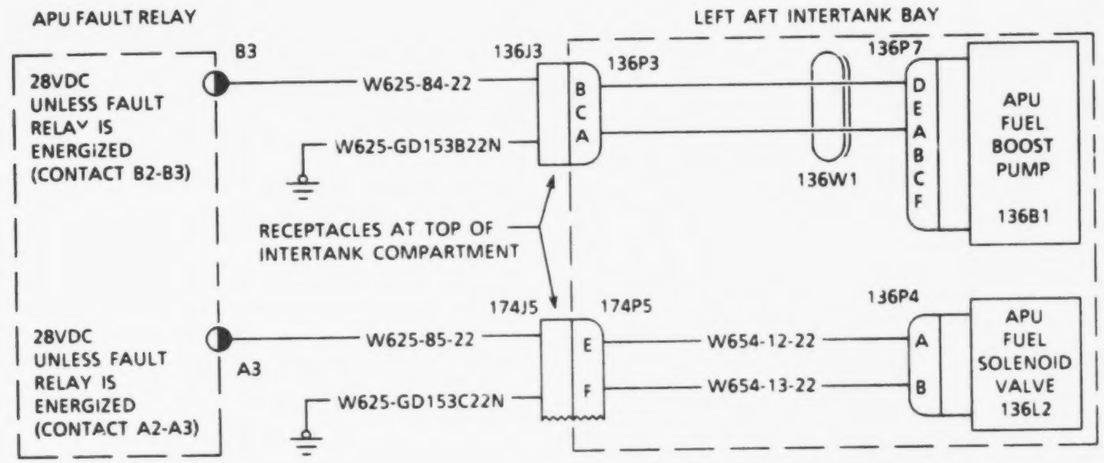
GO TO NEXT PAGE

15-3.7 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ○ ● THEN ● ○ ○ ● (CONTINUED)


SET APU SW TO OFF DISCONNECT PLUG 136P1 FROM ESU CHECK FOR RESISTANCE BETWEEN PINS 9 AND 10 OF PLUG 136P1 IS RESISTANCE LESS THAN 500 OHMS?
YES
REPLACE APU FUEL INLET FILTER RECONNECT PLUG 136P1 REPEAT OPERATIONAL CHECK TASK 15-1 5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
NO
REFER TO ESU TROUBLESHOOTING TASK 15-6.13
NO
SET APU SW TO OFF REMOVE FUEL PUMP FILTER AND CLEAN IT REPEAT OPERATIONAL CHECK TASK 15-1 5 DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
NO
SET APU SW TO OFF REPLACE APU MAIN FUEL VALVE REPEAT OPERATIONAL CHECK TASK 15-1 5 DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
NO
SET APU SW TO OFF REPLACE APU ACCELERATION CONTROL REPEAT OPERATIONAL CHECK TASK 15-1 5 DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
NO
SET APU SW TO OFF REMOVE FUEL INJECTORS AND CHECK FOR RESTRICTIONS REFER TO TM 55-2835-205-23 ARE ANY INJECTORS BLOCKED OR RESTRICTED?
YES
CLEAN OR REPLACE BLOCKED OR RESTRICTED FUEL INJECTORS
NO
REPLACE FUEL PUMP REPEAT OPERATIONAL CHECK TASK 15-1 5 DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
NO
REPLACE APU

END OF TASK

15-3.8 APU FUEL BOOST PUMP AND FUEL VALVE ELECTRICAL TESTS



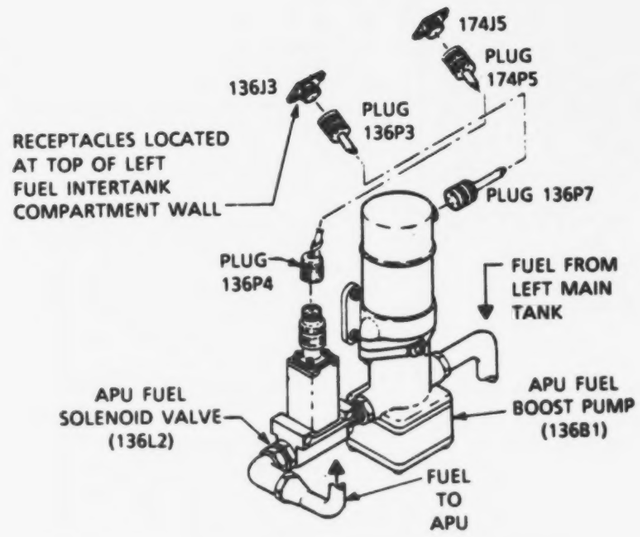
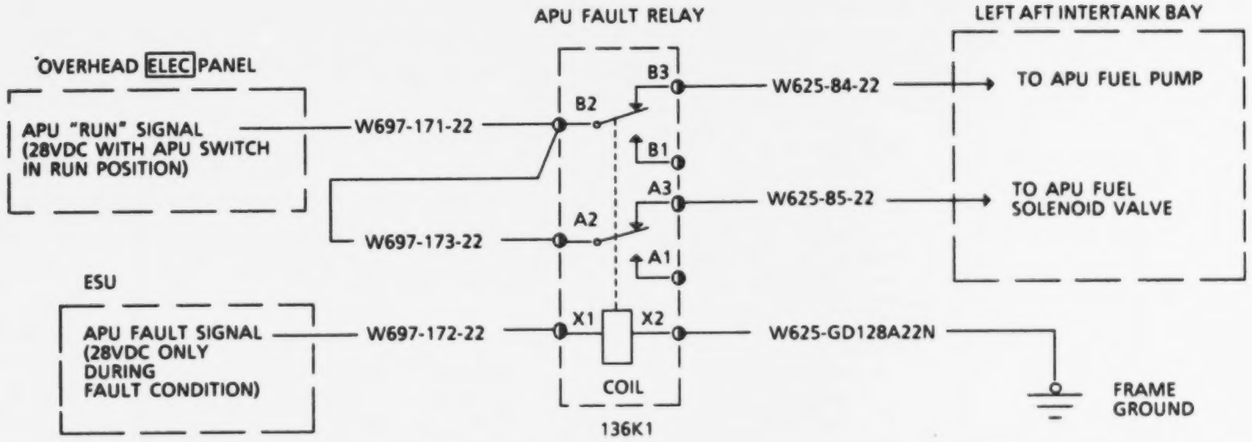


TABLE NO. 15-3.1 – APU FUEL BOOST PUMP AND FUEL SOLENOID VALVE – ELECTRICAL TESTS

TYPE OF TEST	TEST CONDITION	PROCEDURE	METER READING OR TEST RESULTS
RESISTANCE CHECK OF APU FUEL BOOST PUMP.	APU SWITCH TO OFF.	1. OPEN AFT FUEL INTERTANK BAY DOOR. 2. DISCONNECT PLUG 136P3 (AT TOP RIGHT SIDE OF COMPARTMENT). 3. MEASURE RESISTANCE BETWEEN PINS A AND B ON 136P3. 4. RECONNECT 136P3 TO 136J3.	15 OHMS
RESISTANCE CHECK OF APU FUEL SOLENOID VALVE.	APU SWITCH TO OFF.	1. OPEN AFT FUEL INTERTANK BAY DOOR. 2. DISCONNECT PLUG 174P5 (AT TOP RIGHT SIDE OF COMPARTMENT). 3. MEASURE RESISTANCE BETWEEN PINS E AND F ON 174P5. 4. RECONNECT 174P5 TO 174J5.	180-220 OHMS
VOLTAGE CHECK AT APU FUEL BOOST PUMP PLUG.	APU SWITCH TO RUN.	1. BOOST PUMP SHOULD BE HEARD RUNNING AS APU SWITCH IS PLACED TO RUN POSITION. IF NOT, CHECK VOLTAGE. 2. DISCONNECT PLUG AT BOOST PUMP AND MEASURE VOLTAGE BETWEEN PINS D AND A. 3. RECONNECT PLUG TO BOOST PUMP.	28VDC
VOLTAGE CHECK AT APU FUEL SOLENOID VALVE.	APU SWITCH TO RUN.	1. DISCONNECT PLUG AT APU FUEL BOOST PUMP. 2. DISCONNECT PLUG 136P4 AT APU FUEL SOLENOID VALVE. 3. PLACE APU SWITCH TO RUN AND MEASURE VOLTAGE BETWEEN PINS A AND B OF 136P4. 4. RECONNECT BOTH PLUGS.	28VDC

15-3.9 APU FAULT RELAY ELECTRICAL TESTS



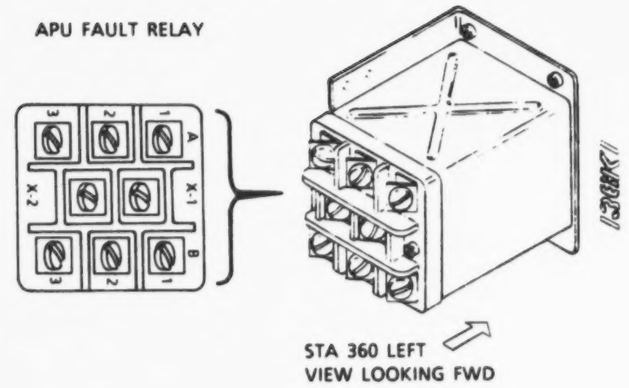


TABLE NO. 15-3.2 – APU FAULT RELAY – ELECTRICAL TESTS

TYPE OF TEST	TEST CONDITION	PROCEDURE	METER READING OR TEST RESULTS
INITIAL SET-UP.	APU SW. TO OFF	1. REMOVE WIRE W625-84-22 FROM B3. 2. REMOVE WIRE W625-85-22 FROM A3. 3. REMOVE WIRE W697-172-22 FROM X1. 4. REMOVE WIRE W697-171-22 FROM B2.	————
B2-B3 CONTACT CHECK WITH ZERO VOLTS ON COIL.	APU SW. TO OFF	PLACE OHMMETER TEST LEADS ACROSS B2 AND B3 AND MEASURE RESISTANCE.	"0" OHMS
A2-B3 CONTACT CHECK WITH ZERO VOLTS ON COIL.	APU SW. TO OFF	PLACE OHMMETER TEST LEADS ACROSS A2 AND A3 AND MEASURE RESISTANCE.	"0" OHMS
COIL RESISTANCE CHECK.	APU SW. TO OFF	PLACE OHMMETER TEST LEADS ACROSS X1 AND X2 AND MEASURE RESISTANCE.	150 OHMS
VOLTAGE TO RELAY CONTACTS CHECK.	APU SW. TO ON	PLACE VOLTMETER TEST LEADS BETWEEN FRAME GROUND AND WIRE W697-171-22 (WHICH WAS REMOVED FROM B2).	28 VDC
RELAY COIL CHECK.	APU SW. TO ON	PLACE JUMPER CLIP LEADS BETWEEN WIRE W697-171-22 AND X1.	RELAY COIL "CLICK" SHOULD BE HEARD.
B2-B3 CONTACT CHECK WITH VOLTAGE ON COIL.	APU SW. TO ON	RETAIN JUMPER BETWEEN WIRE W697-171-22 AND X1. MEASURE RESISTANCE ACROSS B2 AND B3.	METER INDICATES "OPEN" CIRCUIT.
A2-B3 CONTACT CHECK WITH VOLTAGE ON COIL.	APU SW. TO ON	RETAIN JUMPER BETWEEN WIRE W697-171-22 AND X1. MEASURE RESISTANCE ACROSS A2 AND A3.	METER INDICATES "OPEN" CIRCUIT.
RETURN OF WIRES TO TERMINALS ON RELAY.	APU SW. TO OFF	1. REMOVE JUMPER. 2. REPLACE WIRE W625-84-22 ON B3. 3. REPLACE WIRE W625-85-22 ON A3. 4. REPLACE WIRE W697-172-22 ON X1. 5. REPLACE WIRE W697-171-22 ON B2. 6. USE WIRING DIAGRAM TO DOUBLE CHECK RELAY WIRING.	————

15-3.10 APU START AND MAIN FUEL VALVES ELECTRICAL TESTS

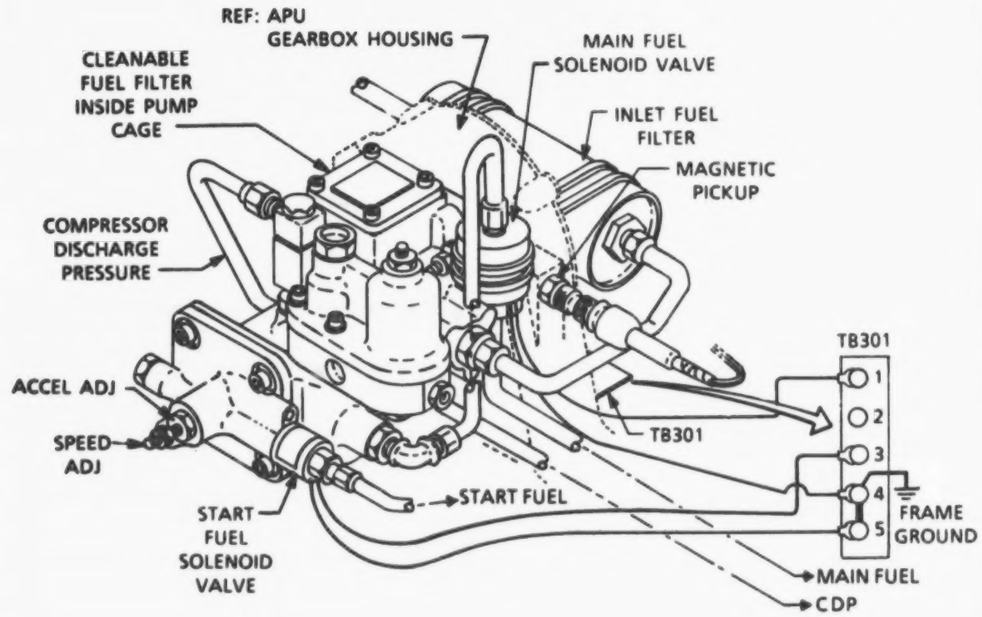


TABLE NO. 15-3.3 APU START AND MAIN FUEL VALVES ELECTRICAL TESTS

TEST CONDITIONS	COMPONENT	TEST POINTS	MULTIMETER READINGS	
			VOLTAGE	RESISTANCE
Connect Zelda Tester to ESU & APU. Refer to Para 15-6 for details. Move Master switch and Start / Run Switches to UP position.	Start Fuel Solenoid Valve	Terminal Board Terminals 3 & GND	28 Volts Between 5% & 70% APU Speed	---
		Terminal Board Terminals 5 & GND	0 Volts At all Times	---
	Main Fuel Solenoid Valve	Terminal Board Terminals 1 & GND	28 Volts Above 15% APU Speed	---
Move Start / Run Switch to DOWN position.	Terminal Board Ground Connection	Terminal 4 and GND Terminal 5 and GND	---	Zero Ohms
Remove ESU Plug 136P1	Start Fuel Solenoid Valve	Terminals 3 and 5	---	40 Ohms ⚠1
	Main Fuel Solenoid Valve	Terminals 1 and 5	---	60 Ohms

NOTE: ⚠1 IGNITION EXCITER IS ALSO CONNECTED TO TERMINAL 3. RESISTANCE READING WOULD INCREASE WITH IGNITION EXCITER DISCONNECTED.

15-4 APU HYDRAULIC SYSTEM

PARAGRAPH 15-4

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APU HYDRAULIC SYSTEM TROUBLESHOOTING

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15-4.3	MAJOR INTERCONNECTING APU HYDRAULIC SYSTEM SCHEMATIC	DRAWING	15-70
15-4.4	CHARGING ACCUMULATOR FLOW DIAGRAM	DRAWING	15-72
15-4.5	APU HYDRAULIC START MOTOR FLOW DIAGRAM	DRAWING	15-73
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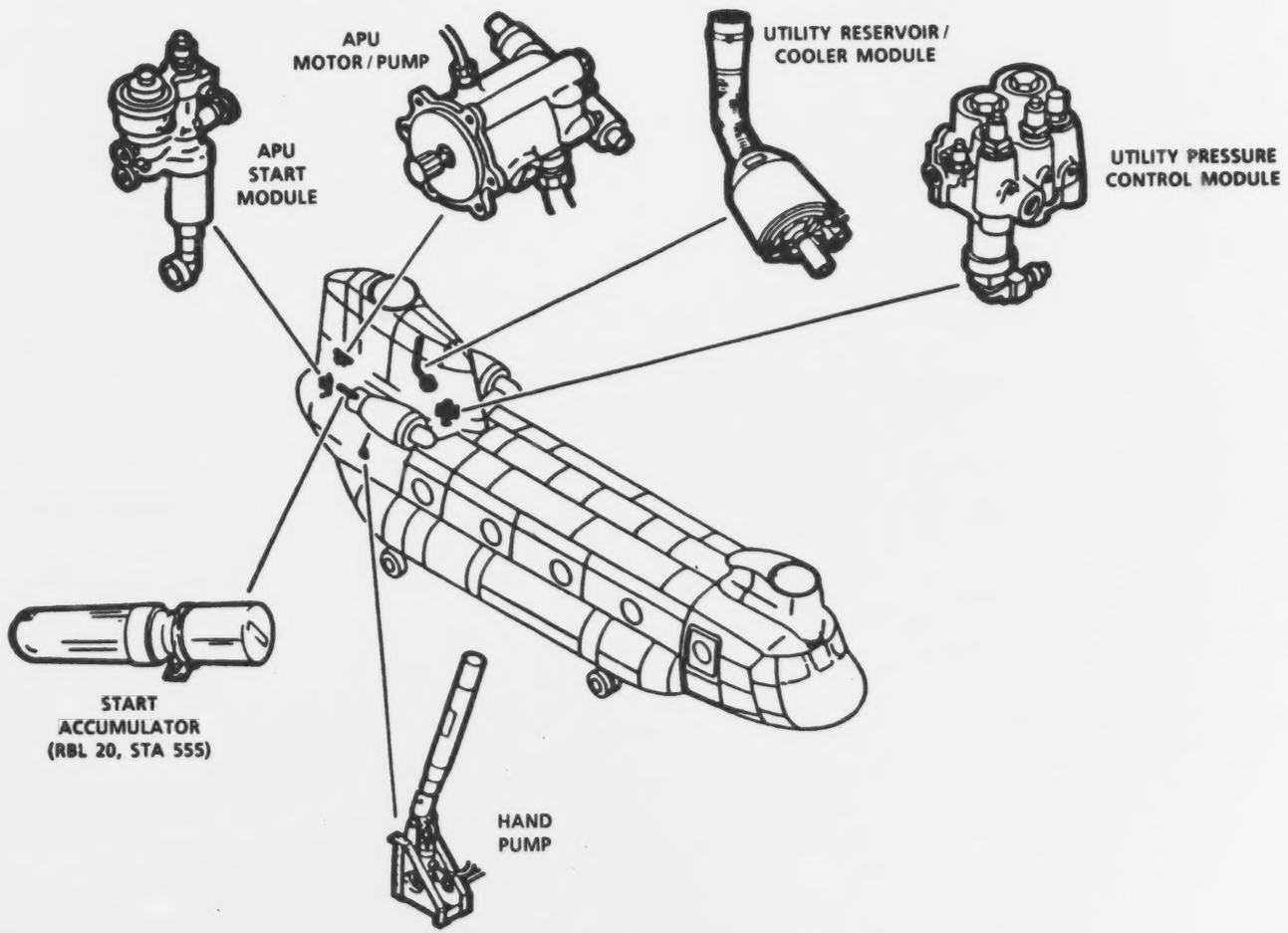
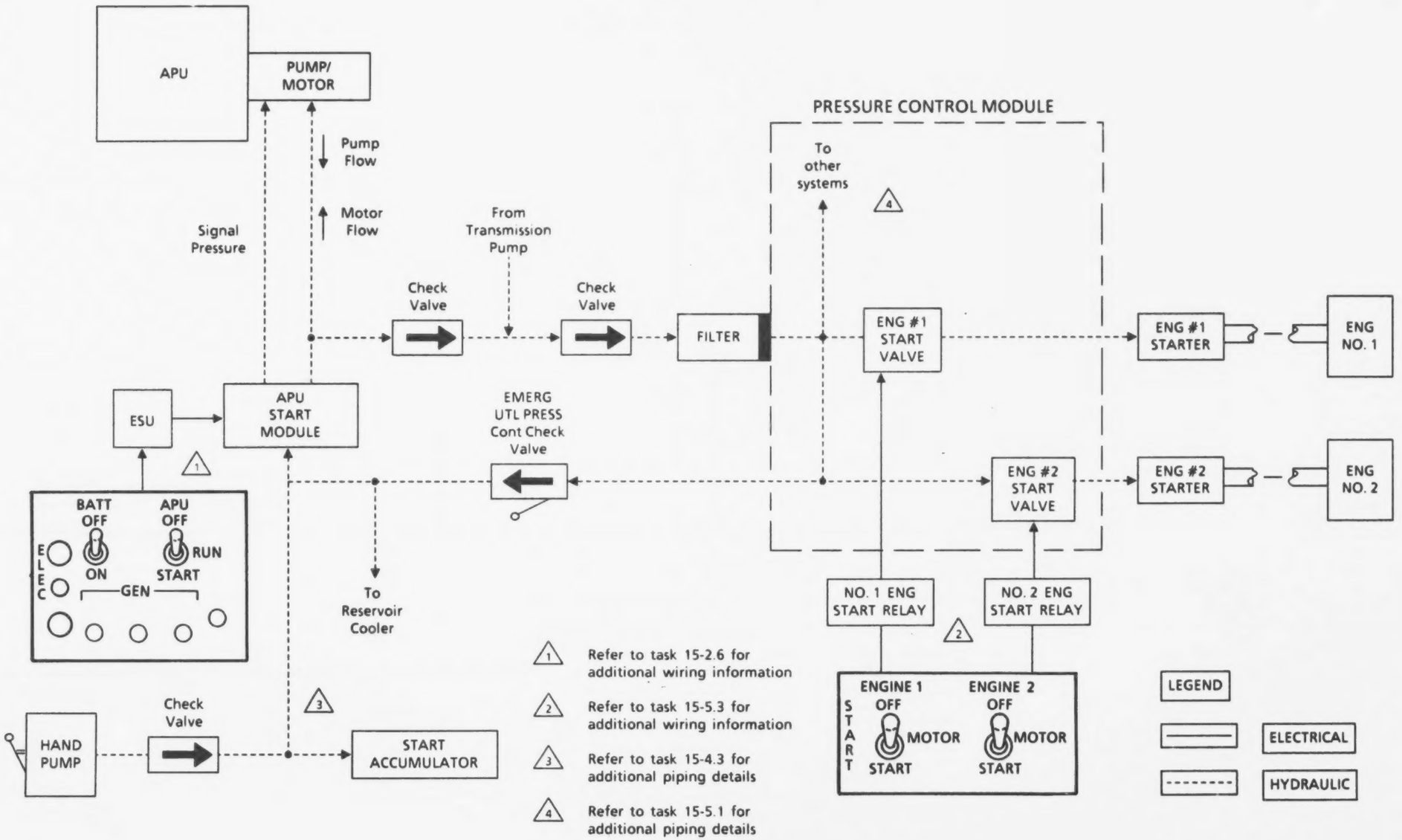
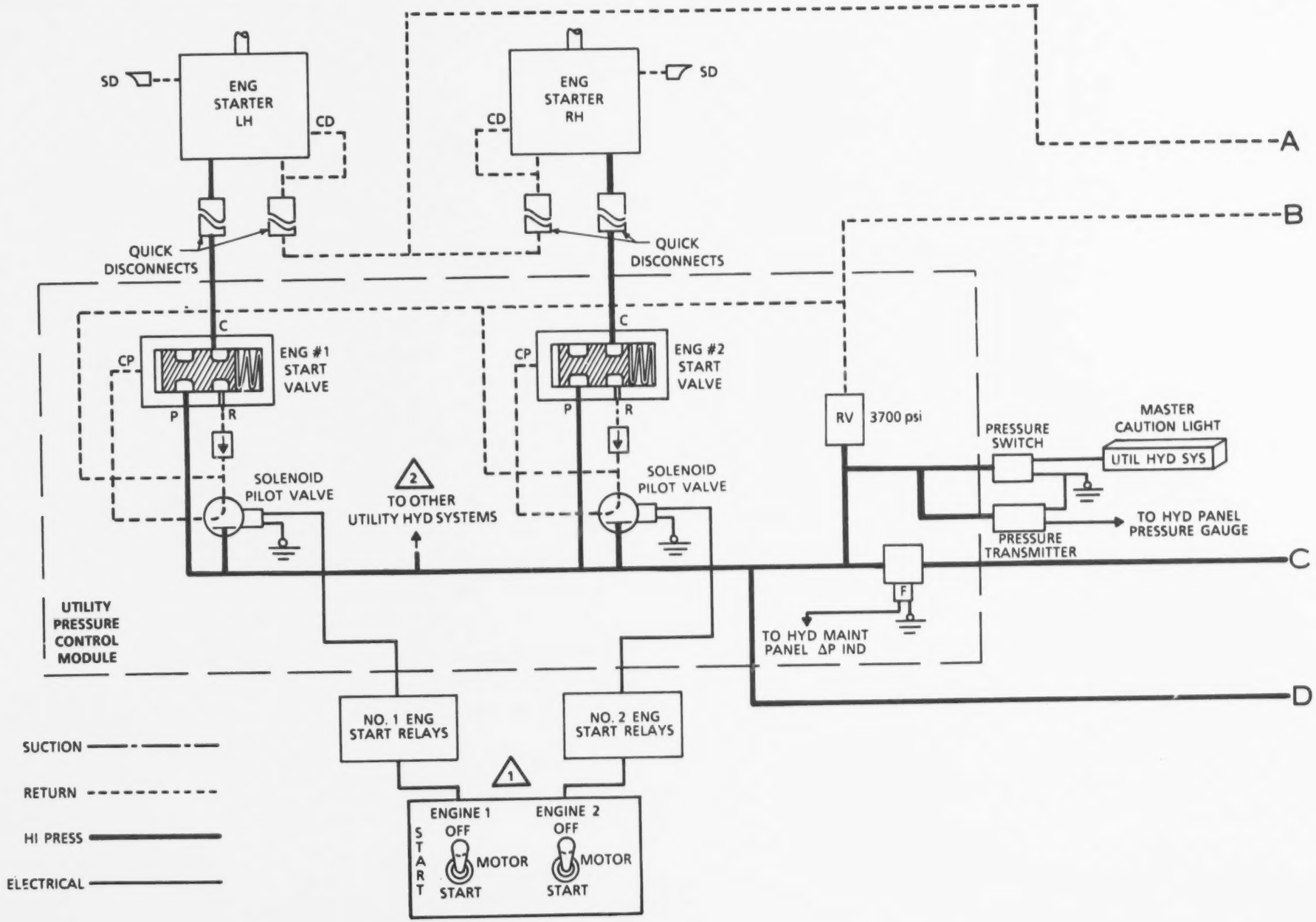
15-4.9	APU START ACCUMULATOR GAGE DOES NOT INDICATE AT LEAST 2850 PSI	TASK	15-78
15-4.10	APU DOES NOT MOTOR	TASK	15-80
15-4.11	APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○●●● OR ○○●● THEN ●○○● (HYDRAULIC FAULT)	TASK	15-82
15-4.12	APU PUMP FAULT LIGHT IS ON	TASK	15-84
15-4.13	HYDRAULIC HANDPUMP SCHEMATIC	DRAWING	15-86


APU
MOTOR / PUMP
UTILITY RESERVOIR /
COOLER MODULE
APU
START
MODULE
UTILITY PRESSURE
CONTROL MODULE
START
ACCUMULATOR
(RBL 20, STA 555)
HAND
PUMP

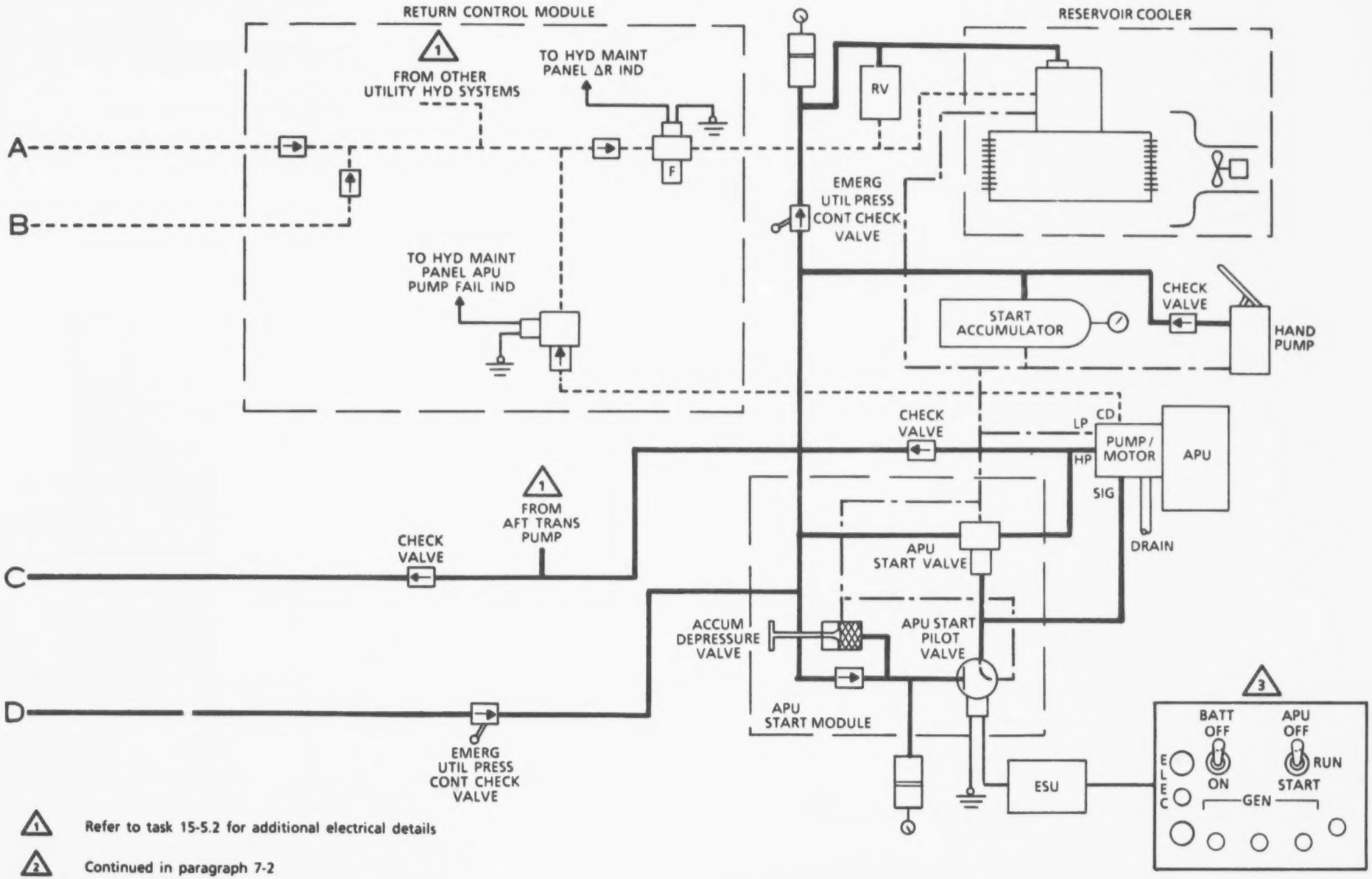
15-4.2 OVERALL APU HYDRAULIC SYSTEM BLOCK DIAGRAM



15-4.3 MAJOR INTERCONNECTING APU HYDRAULIC SYSTEM SCHEMATIC



15-4.3 MAJOR INTERCONNECTING APU HYDRAULIC SYSTEM SCHEMATIC (CONTINUED)



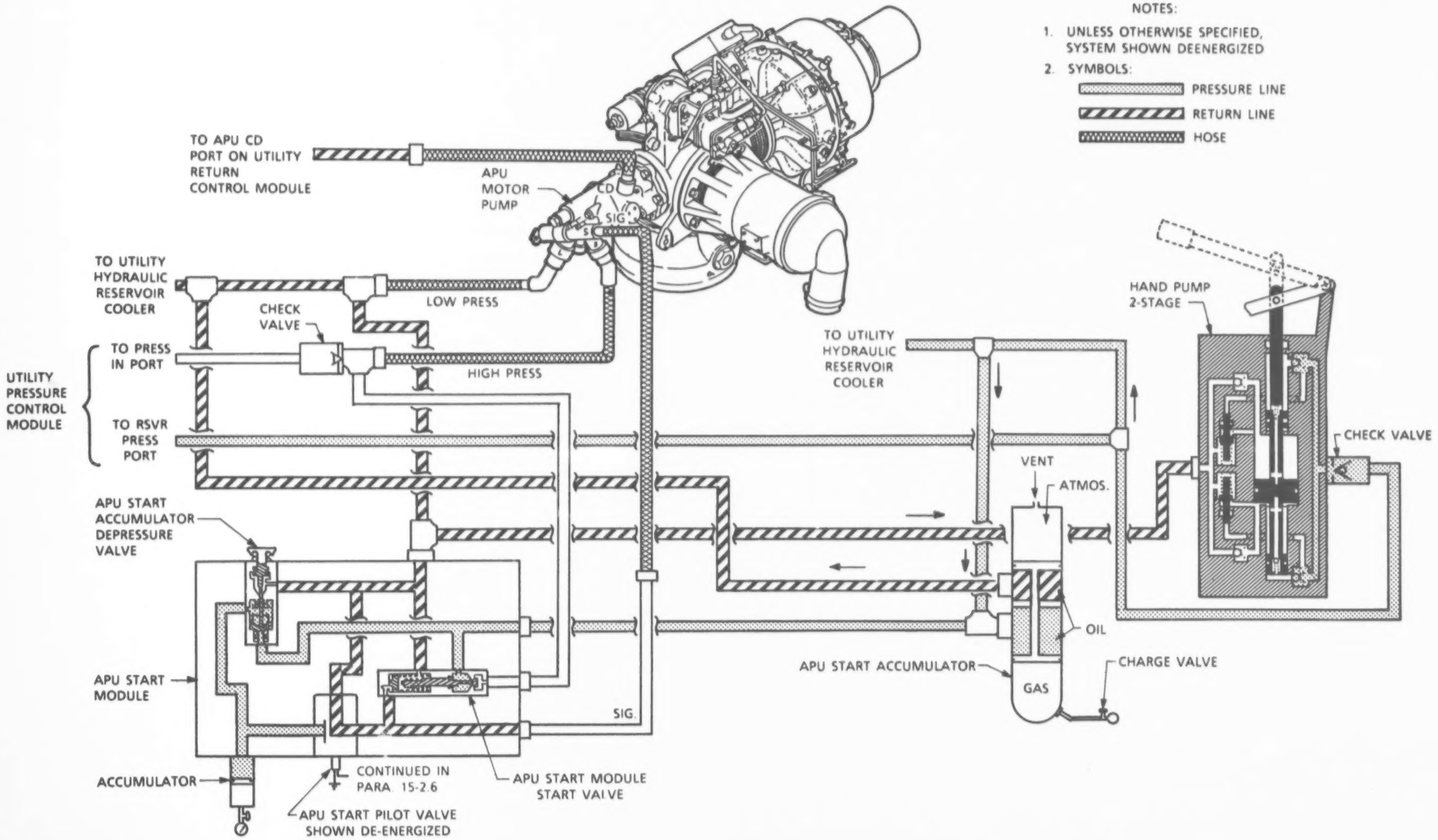
Note:

1 Refer to task 15-5.2 for additional electrical details

2 Continued in paragraph 7-2

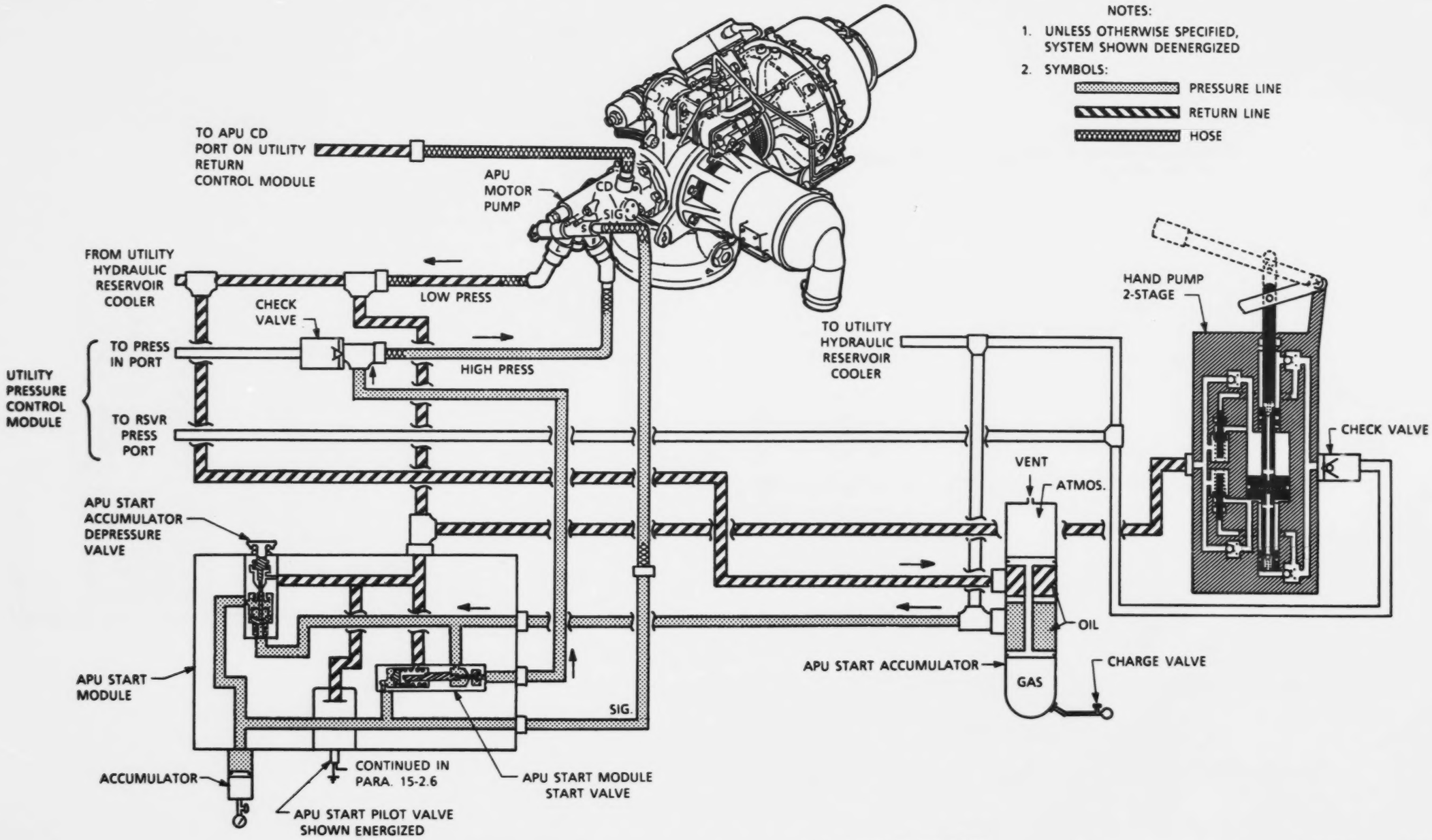
3 Refer to task 15-2.5 for additional electrical details

15-4.4 CHARGING ACCUMULATOR FLOW DIAGRAM



15-4.5 APU HYDRAULIC START MOTOR FLOW DIAGRAM

NOTES:
1. UNLESS OTHERWISE SPECIFIED, SYSTEM SHOWN DEENERGIZED
2. SYMBOLS:
   - PRESSURE LINE
   - RETURN LINE
   - HOSE



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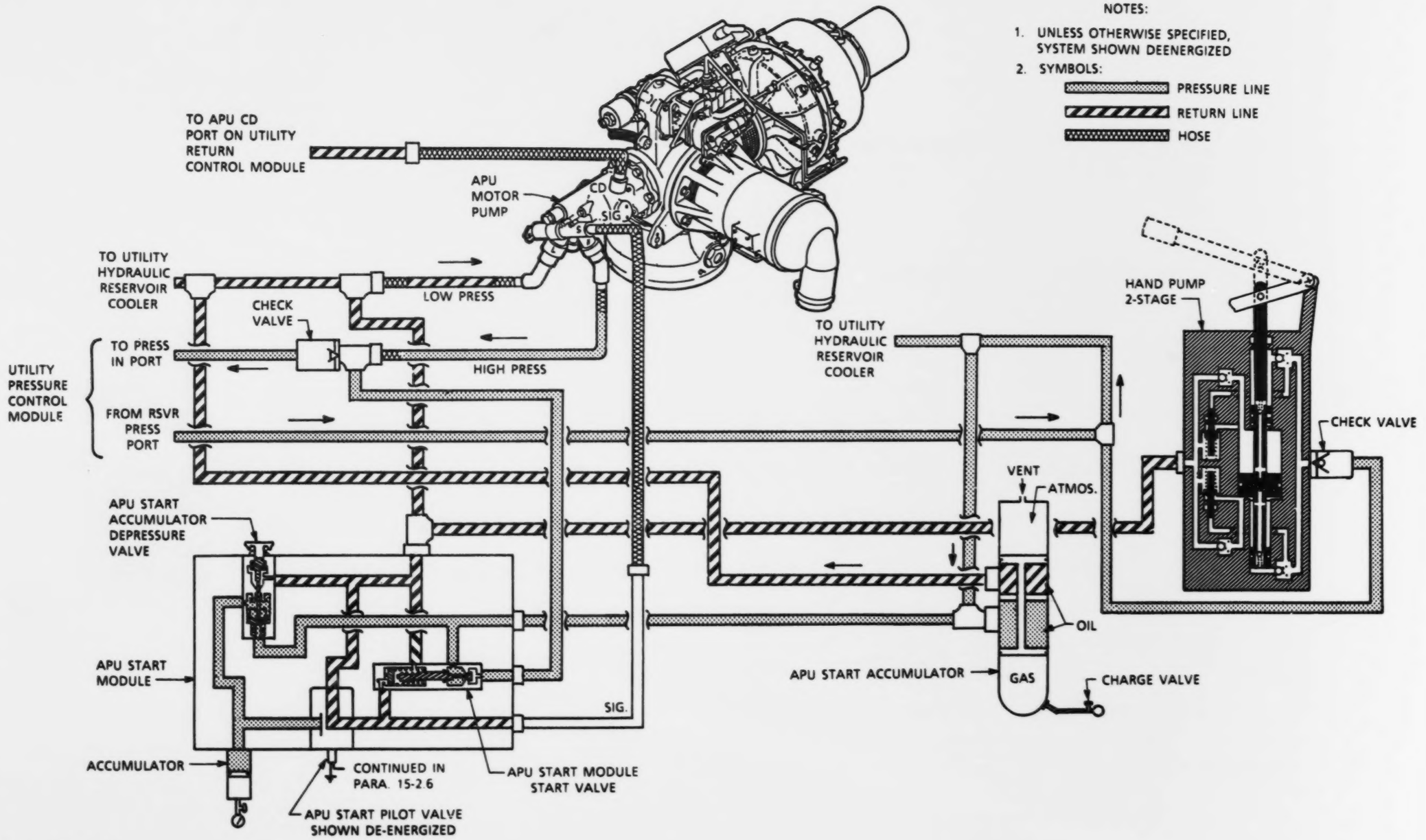
15-4.6 APU HYDRAULIC PUMP FLOW DIAGRAM



15-4.7 APU HYDRAULIC STARTING SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

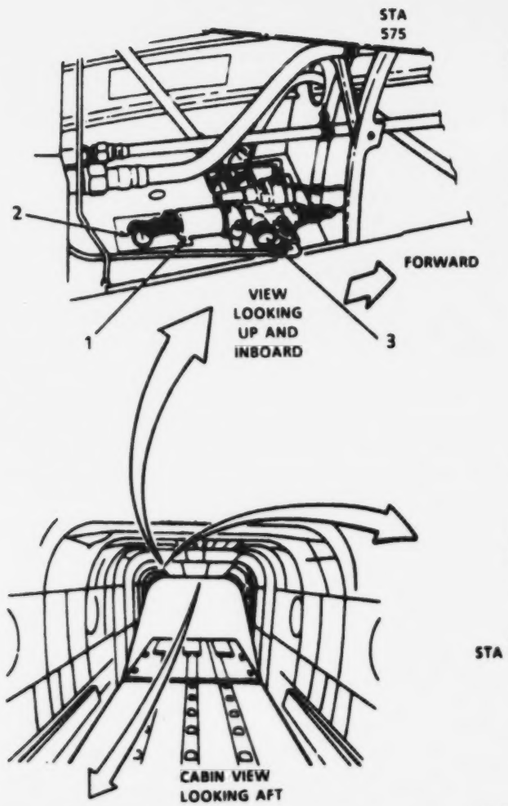
Personnel Required:
Medium Helicopter Repairer

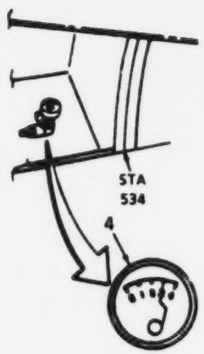
References:
TM 55-1520-240-23

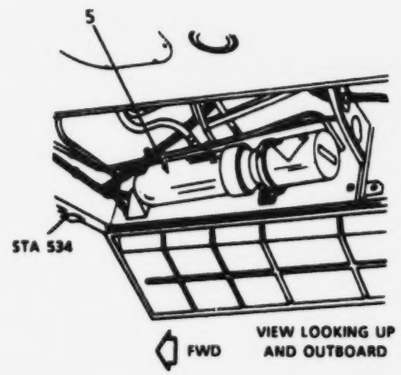
Equipment Condition:
TM 55-1520-240-23:
Electrical Power Off
Battery Disconnected
Hydraulic Power Off
Right Aft Transmission
Baffle Open
Cargo Ramp Operational Level
(Task 7-3.4)

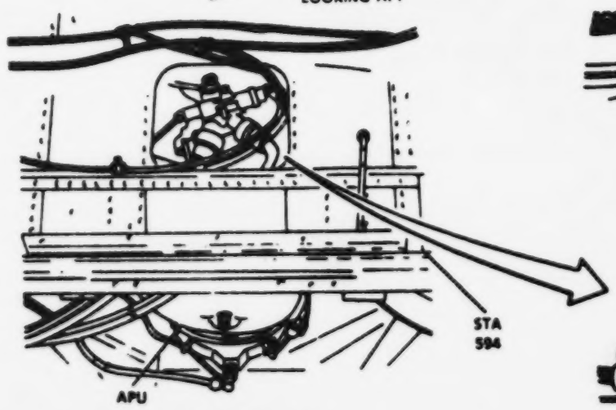
TASK	RESULT
1. **Check APU start module accumulator (1).**	If accumulator (1) or accumulator gage (2) is damaged, replace accumulator.
2. **Check APU start module (3).**	If any tube to module (3) is loose or damaged, tighten or replace it as required. If electrical connector to module is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.
3. **Check APU start accumulator gage (4).**	If gage (4) is loose or damaged, tighten or replace it as required.
4. **Check APU start accumulator (5).**	If accumulator (5) is loose or damaged, tighten or replace it as required. If any tube to accumulator is loose or damaged, tighten or replace it as required.
5. **Check APU motor pump (6).**	If pump (6) is loose or damaged, tighten or replace it as required. If any hose to pump is loose or damaged, tighten or replace it as required.

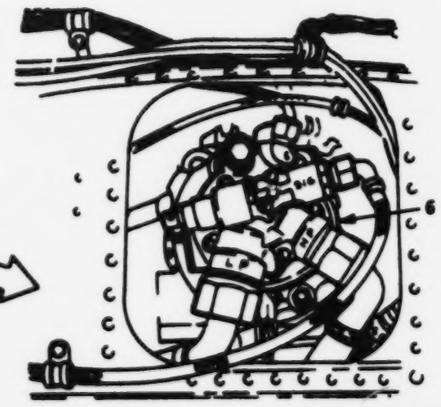
FOLLOW-ON MAINTENANCE:
None











END OF TASK

15-4.8 APU HYDRAULIC STARTING SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

References:
TM 55-1520-240-23

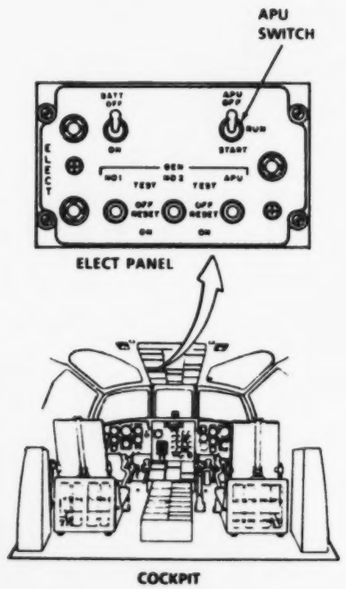
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power Off
Hydraulic Power Off
Visual Check of Apu Hydraulic Starting System Performed (Task 15-4.7)

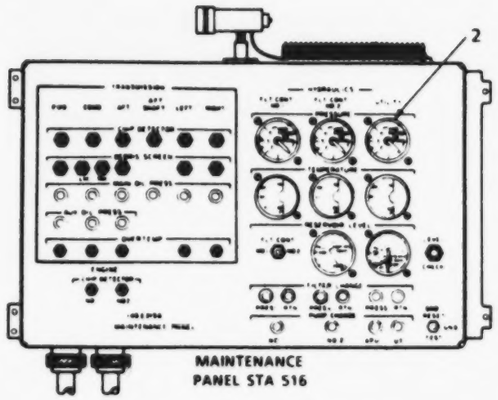
TASK	RESULT
1. **Check APU start accumulator gage (1).**	Gage (1) shall indicate between 2850 and 3100 psi. If it does not, use hand pump to charge accumulator. If gage still does not indicate between 2850 and 3100 psi, go to task 15-4.9.
2. **Start APU.** Refer to task 15-1.5.	APU shall begin to motor and accelerate to running speed within 30 seconds. UTILITY HYDRAULICS indicator (2) shall indicate 3200 to 3500 psi. If indicator does not indicate 3200 to 3500 psi, stop apu and go to task 7-2.4. If APU does not motor, go to task 15-4.10. If APU motors but does not start and ESU bite indicates ○ ○ ○ ● then ● ○ ○ ●, go to task 15-4.11.
3. **Stop APU.** Refer to task 15-1.5.	

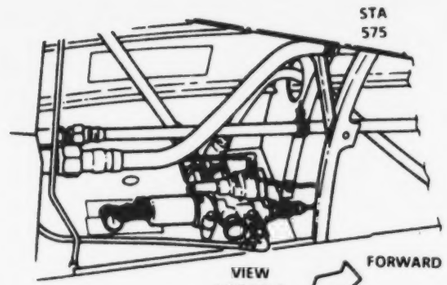
FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23

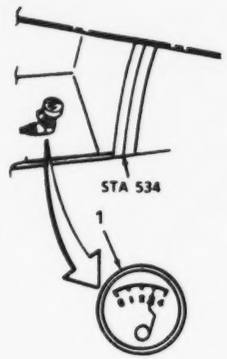
GO TO NEXT PAGE

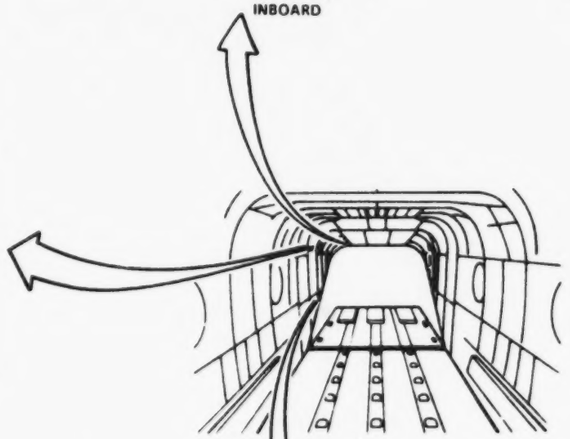
15-4.8 APU HYDRAULIC STARTING SYSTEM OPERATIONAL CHECK (CONTINUED)

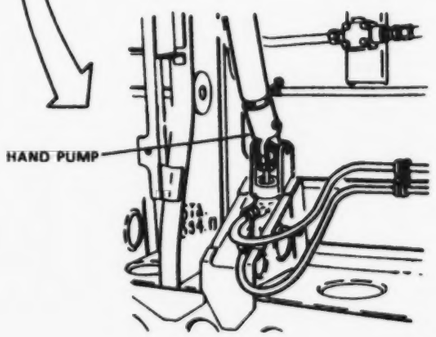












END OF TASK

15-4.9 APU START ACCUMULATOR GAGE DOES NOT INDICATE AT LEAST 2850 PSI

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

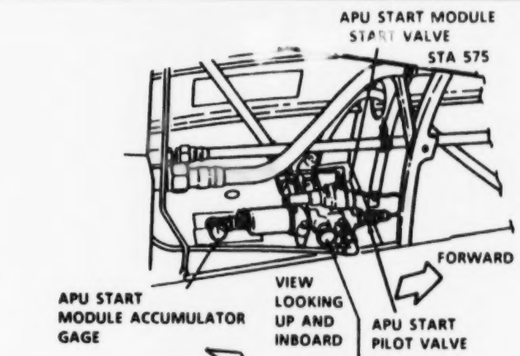
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Hydraulic Power Source
Pressure Gage 5000 PSI

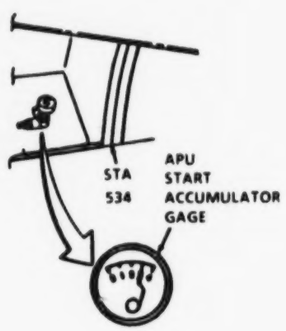
Materials:
None

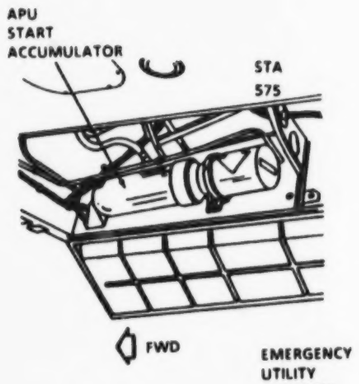
Personnel Required:
Medium Helicopter Repairer (2)

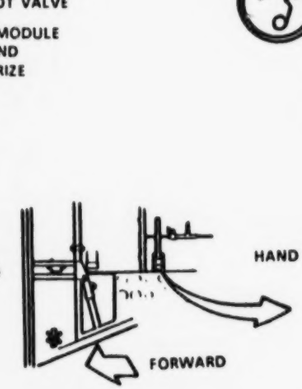
References:
TM 55-1520-240-23

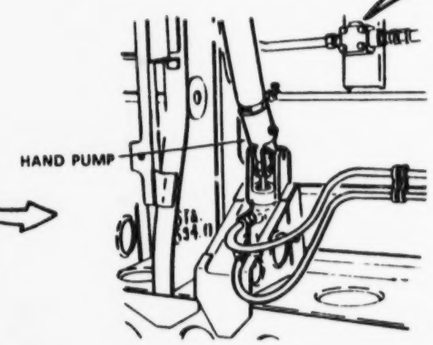
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off except as needed

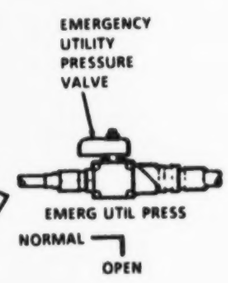


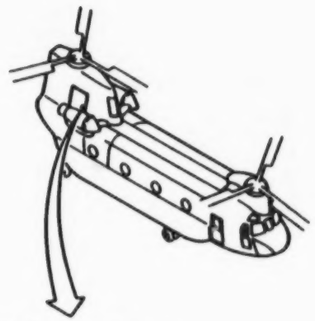


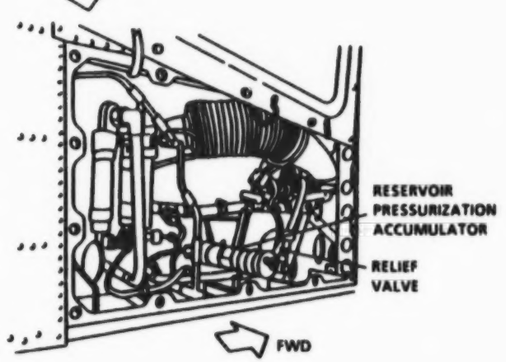












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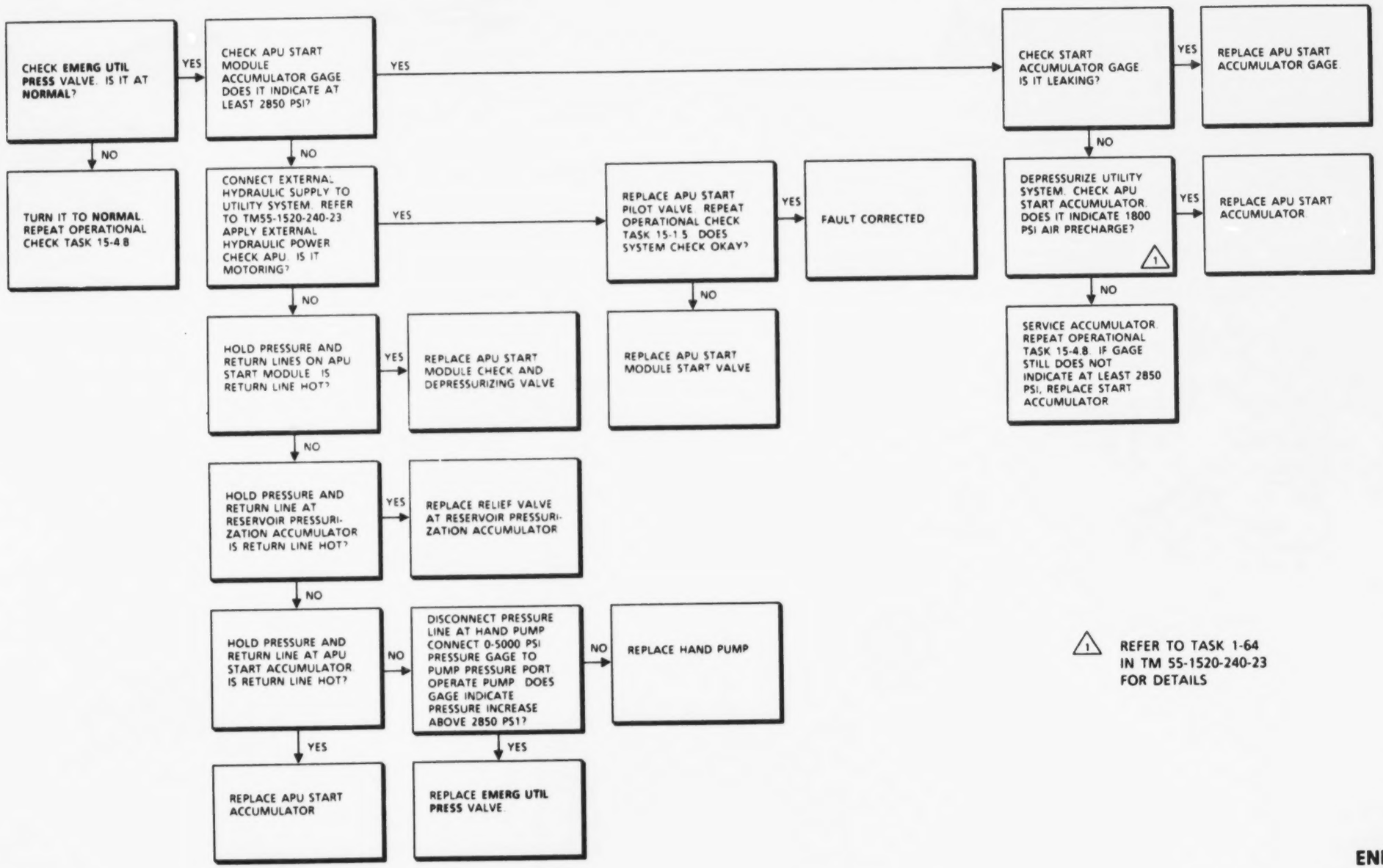
15-4.9 APU START ACCUMULATOR GAGE DOES NOT INDICATE AT LEAST 2850 PSI (CONTINUED)


CHECK EMERG UTIL PRESS VALVE. IS IT AT NORMAL?
YES
CHECK APU START MODULE ACCUMULATOR GAGE. DOES IT INDICATE AT LEAST 2850 PSI?
YES
CHECK START ACCUMULATOR GAGE. IS IT LEAKING?
YES
REPLACE APU START ACCUMULATOR GAGE.
NO
TURN IT TO NORMAL. REPEAT OPERATIONAL CHECK TASK 15-4.8
NO
CONNECT EXTERNAL HYDRAULIC SUPPLY TO UTILITY SYSTEM. REFER TO TM55-1520-240-23 APPLY EXTERNAL HYDRAULIC POWER CHECK APU. IS IT MOTORING?
YES
REPLACE APU START PILOT VALVE. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES SYSTEM CHECK OKAY?
YES
FAULT CORRECTED
NO
DEPRESSURIZE UTILITY SYSTEM. CHECK APU START ACCUMULATOR. DOES IT INDICATE 1800 PSI AIR PRECHARGE? (1)
YES
REPLACE APU START ACCUMULATOR
NO
SERVICE ACCUMULATOR. REPEAT OPERATIONAL TASK 15-4.8. IF GAGE STILL DOES NOT INDICATE AT LEAST 2850 PSI, REPLACE START ACCUMULATOR
NO
HOLD PRESSURE AND RETURN LINES ON APU START MODULE. IS RETURN LINE HOT?
YES
REPLACE APU START MODULE CHECK AND DEPRESSURIZING VALVE
NO
REPLACE APU START MODULE START VALVE
NO
HOLD PRESSURE AND RETURN LINE AT RESERVOIR PRESSURIZATION ACCUMULATOR IS RETURN LINE HOT?
YES
REPLACE RELIEF VALVE AT RESERVOIR PRESSURIZATION ACCUMULATOR
NO
HOLD PRESSURE AND RETURN LINE AT APU START ACCUMULATOR IS RETURN LINE HOT?
NO
DISCONNECT PRESSURE LINE AT HAND PUMP. CONNECT 0-5000 PSI PRESSURE GAGE TO PUMP PRESSURE PORT. OPERATE PUMP. DOES GAGE INDICATE PRESSURE INCREASE ABOVE 2850 PSI?
NO
REPLACE HAND PUMP
YES
REPLACE APU START ACCUMULATOR
YES
REPLACE EMERG UTIL PRESS VALVE.

(1) REFER TO TASK 1-64 IN TM 55-1520-240-23 FOR DETAILS

END OF TASK

15-4.10 APU DOES NOT MOTOR

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

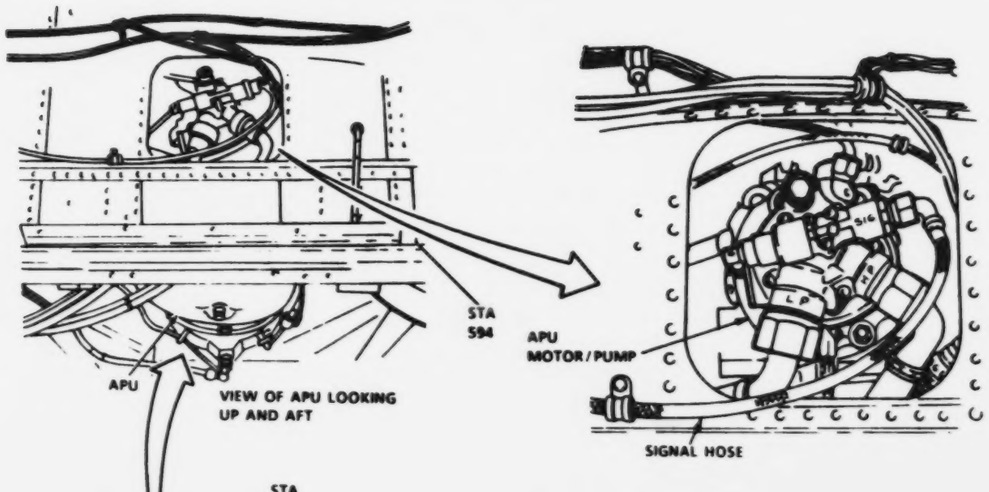
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter
Hydraulic Power Source

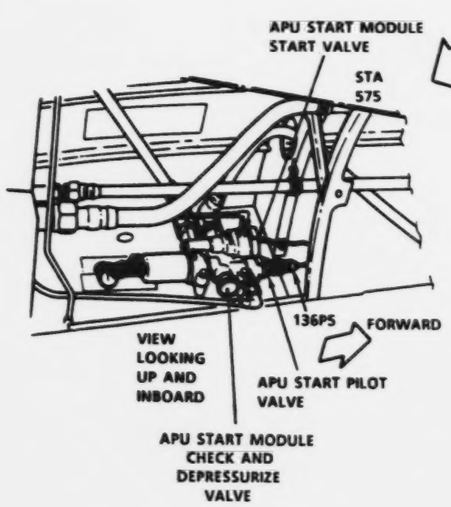
Materials:
None

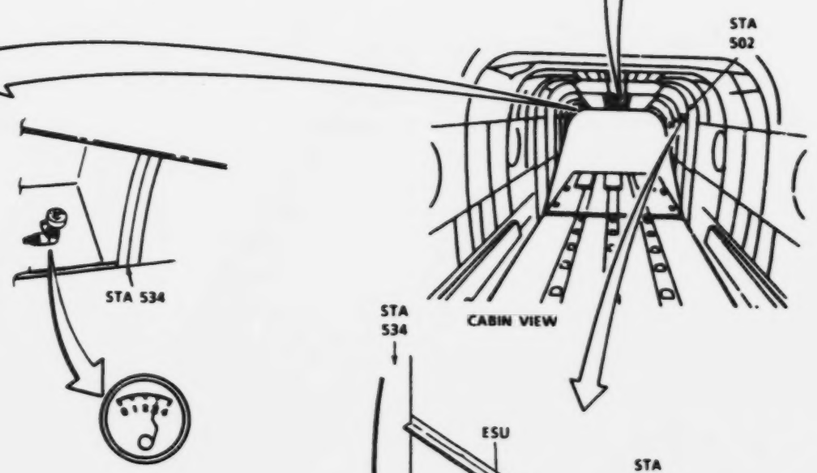
Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

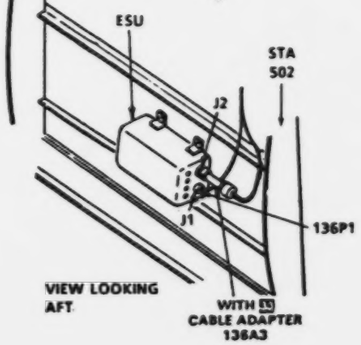
References:
TM 55-1520-240-23

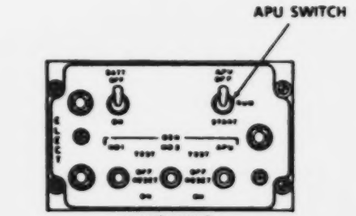
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

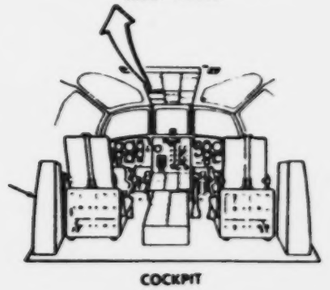












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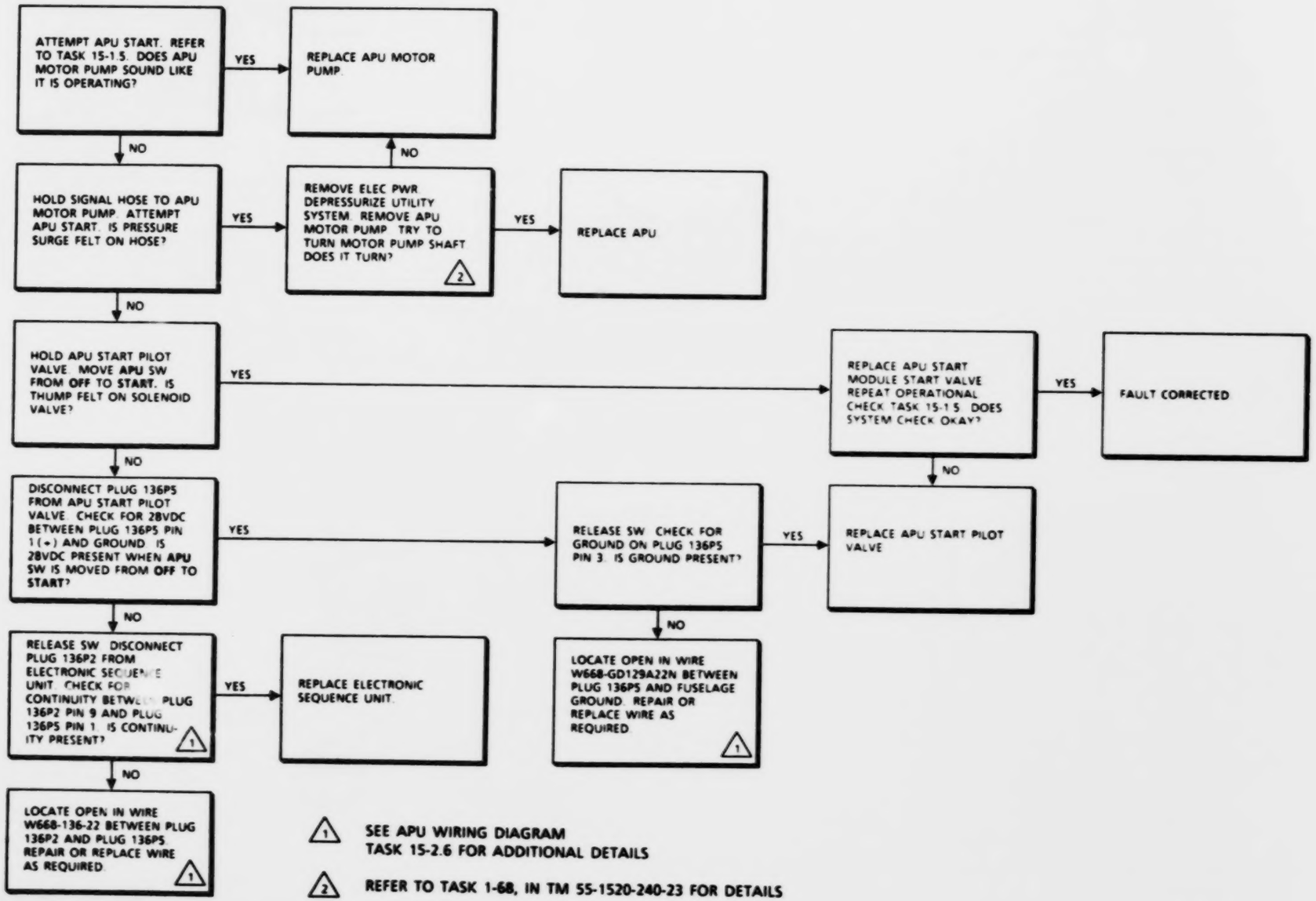
15-4.10 APU DOES NOT MOTOR (CONTINUED)


ATTEMPT APU START. REFER TO TASK 15-1.5. DOES APU MOTOR PUMP SOUND LIKE IT IS OPERATING?
YES
REPLACE APU MOTOR PUMP.
NO
NO
HOLD SIGNAL HOSE TO APU MOTOR PUMP. ATTEMPT APU START. IS PRESSURE SURGE FELT ON HOSE?
YES
REMOVE ELEC PWR. DEPRESSURIZE UTILITY SYSTEM. REMOVE APU MOTOR PUMP. TRY TO TURN MOTOR PUMP SHAFT. DOES IT TURN? 2
YES
REPLACE APU
NO
HOLD APU START PILOT VALVE. MOVE APU SW FROM OFF TO START. IS THUMP FELT ON SOLENOID VALVE?
YES
REPLACE APU START MODULE START VALVE. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES SYSTEM CHECK OKAY?
YES
FAULT CORRECTED
NO
NO
DISCONNECT PLUG 136P5 FROM APU START PILOT VALVE. CHECK FOR 28VDC BETWEEN PLUG 136P5 PIN 1 (+) AND GROUND. IS 28VDC PRESENT WHEN APU SW IS MOVED FROM OFF TO START?
YES
RELEASE SW. CHECK FOR GROUND ON PLUG 136P5 PIN 3. IS GROUND PRESENT?
YES
REPLACE APU START PILOT VALVE
NO
NO
RELEASE SW. DISCONNECT PLUG 136P2 FROM ELECTRONIC SEQUENCE UNIT. CHECK FOR CONTINUITY BETWEEN PLUG 136P2 PIN 9 AND PLUG 136P5 PIN 1. IS CONTINUITY PRESENT? 1
YES
REPLACE ELECTRONIC SEQUENCE UNIT.
LOCATE OPEN IN WIRE W668-GD129A22N BETWEEN PLUG 136P5 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED 1
NO
LOCATE OPEN IN WIRE W668-136-22 BETWEEN PLUG 136P2 AND PLUG 136P5. REPAIR OR REPLACE WIRE AS REQUIRED 1

1 SEE APU WIRING DIAGRAM TASK 15-2.6 FOR ADDITIONAL DETAILS

2 REFER TO TASK 1-68, IN TM 55-1520-240-23 FOR DETAILS

END OF TASK

15-4.11 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ● ● ● OR ○ ○ ● ● THEN ● ○ ○ ● (HYDRAULIC FAULT)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

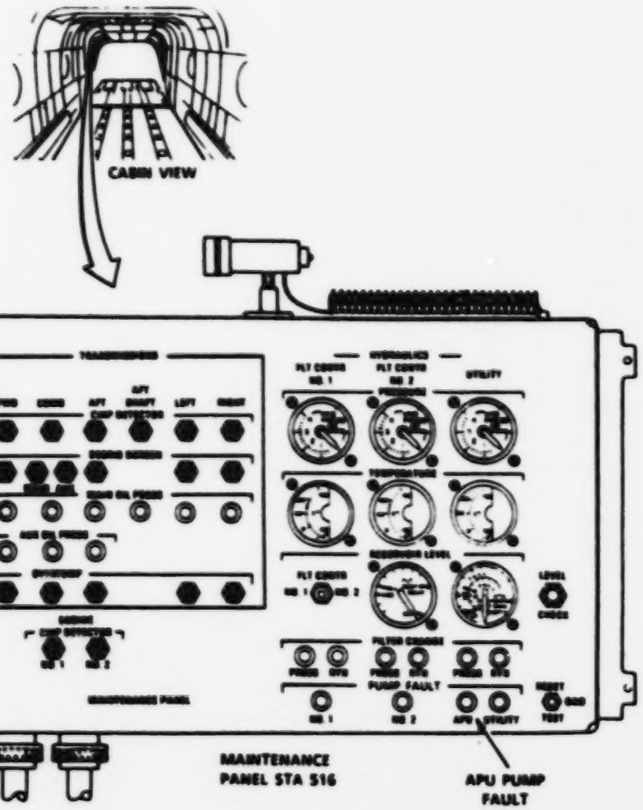
Tools:
Aircraft Mechanic's Tool Kit, NSN 6180-00-323-4692
Hydraulic Power Source

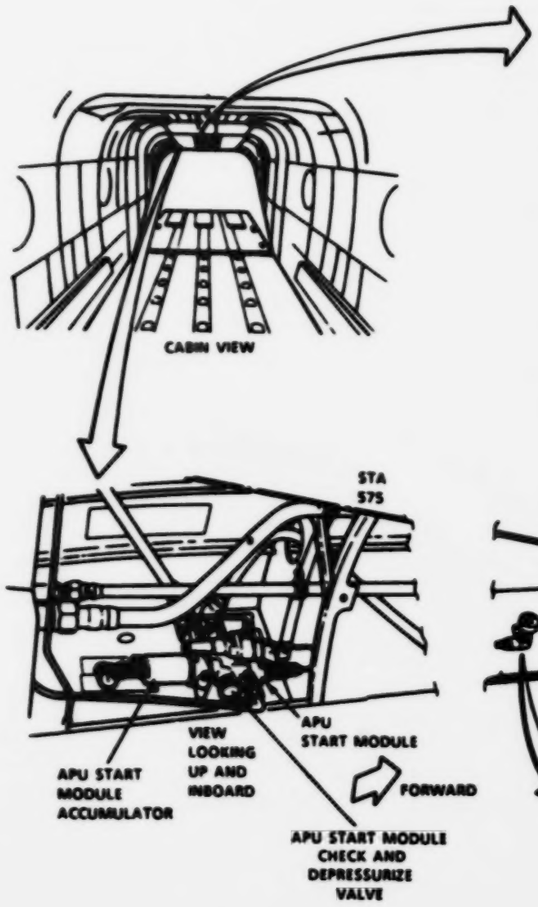
Materials:
None

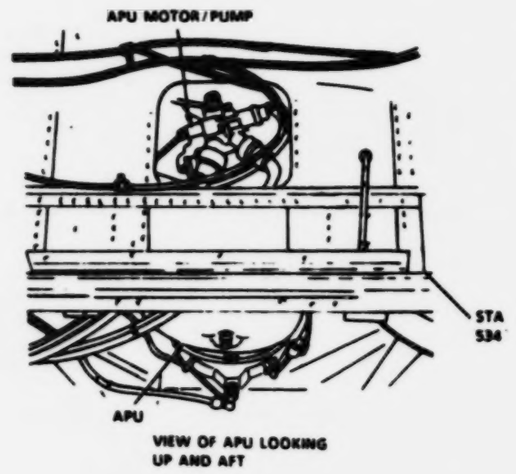
Personnel Required:
Medium Helicopter Repairer (2)

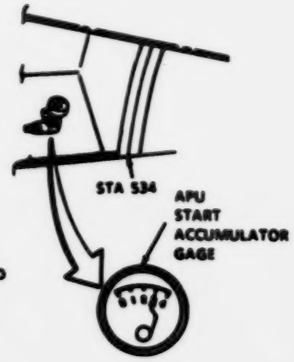
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



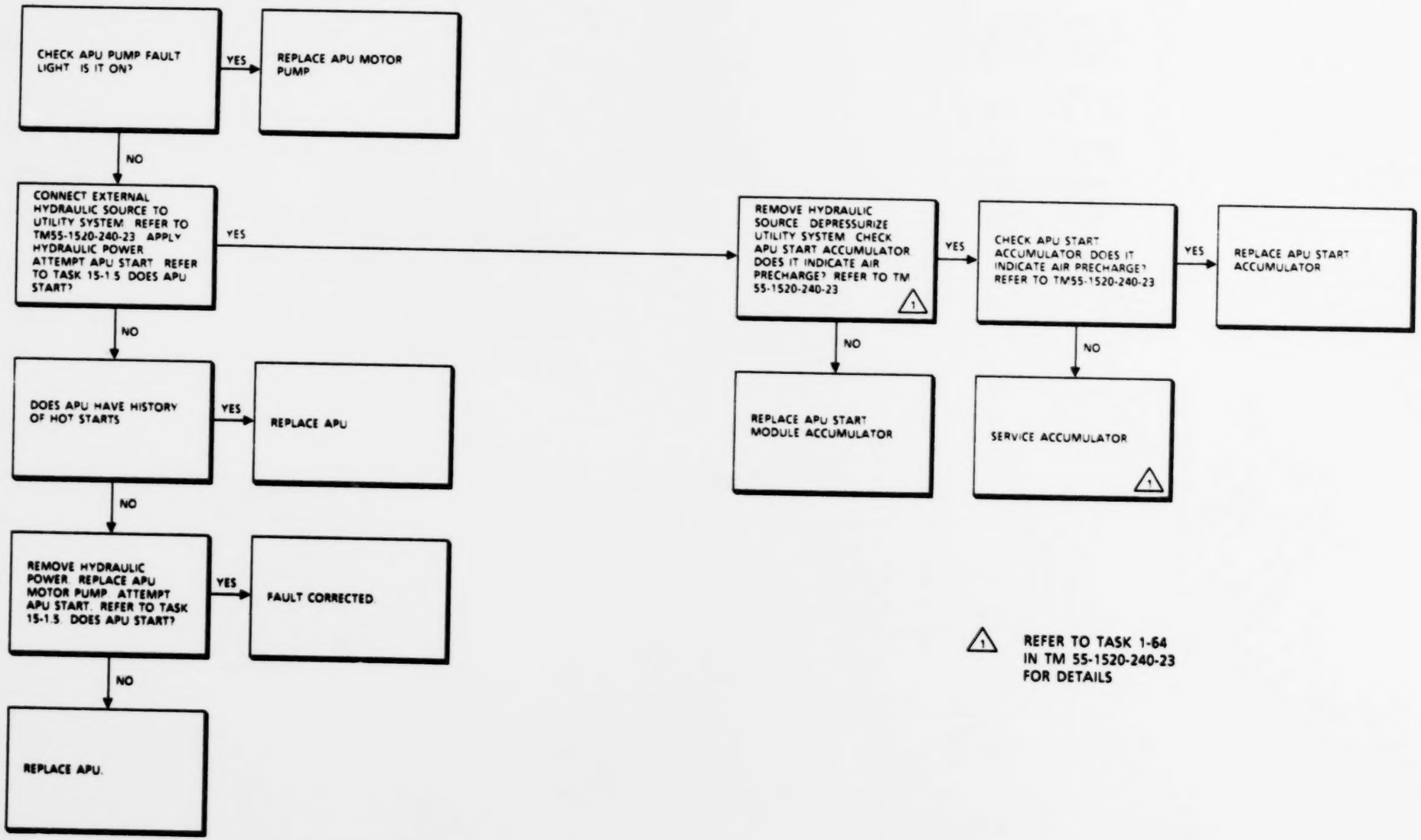






GO TO NEXT PAGE

15-4.11 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○●●● OR ○○●● THEN ●○○● (HYDRAULIC FAULT) (CONTINUED)


CHECK APU PUMP FAULT LIGHT IS IT ON?
YES
REPLACE APU MOTOR PUMP
NO
CONNECT EXTERNAL HYDRAULIC SOURCE TO UTILITY SYSTEM REFER TO TM55-1520-240-23 APPLY HYDRAULIC POWER ATTEMPT APU START REFER TO TASK 15-1.5 DOES APU START?
YES
REMOVE HYDRAULIC SOURCE DEPRESSURIZE UTILITY SYSTEM CHECK APU START ACCUMULATOR DOES IT INDICATE AIR PRECHARGE? REFER TO TM 55-1520-240-23 △1
YES
CHECK APU START ACCUMULATOR DOES IT INDICATE AIR PRECHARGE? REFER TO TM55-1520-240-23
YES
REPLACE APU START ACCUMULATOR
NO
REPLACE APU START MODULE ACCUMULATOR
NO
SERVICE ACCUMULATOR △1
NO
DOES APU HAVE HISTORY OF HOT STARTS
YES
REPLACE APU
NO
REMOVE HYDRAULIC POWER REPLACE APU MOTOR PUMP ATTEMPT APU START REFER TO TASK 15-1.5 DOES APU START?
YES
FAULT CORRECTED
NO
REPLACE APU.

△1 REFER TO TASK 1-64 IN TM 55-1520-240-23 FOR DETAILS

END OF TASK

15-4.12 APU PUMP FAULT LIGHT IS ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

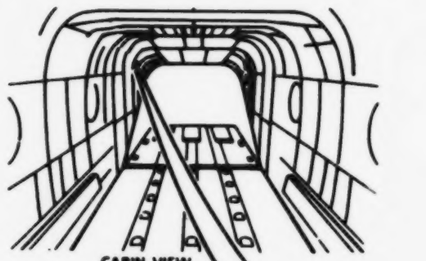
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Multimeter

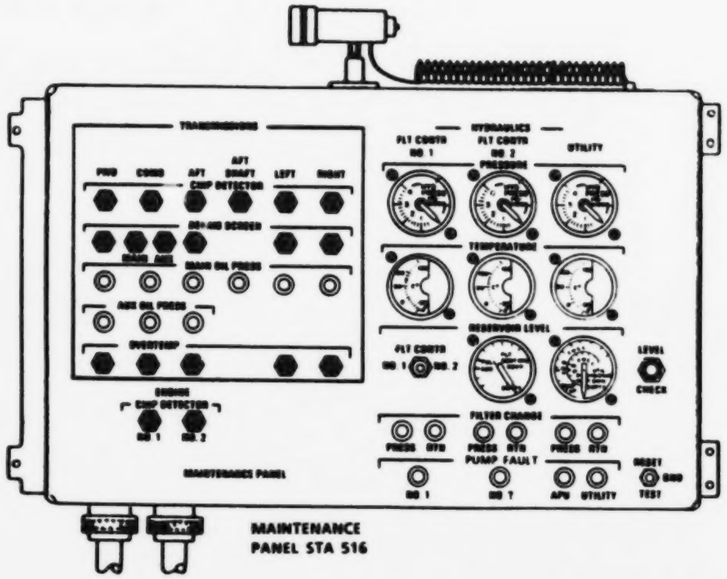
Materials:
None

Personnel Required:
Medium Helicopter Repairer
Aircraft Electrician

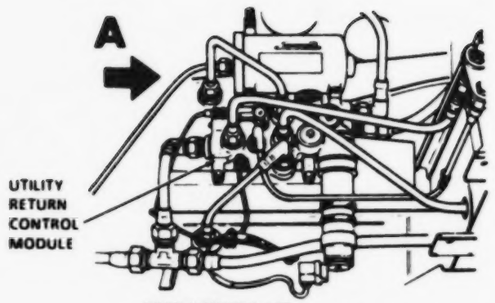
References:
TM 55-1520-280-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

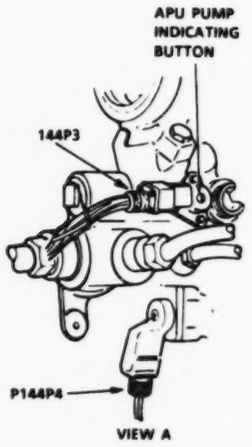




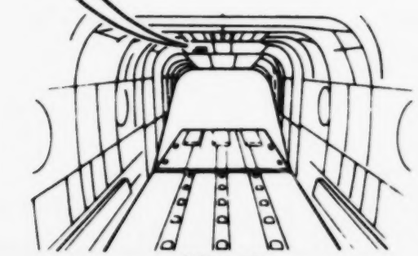
MAINTENANCE
PANEL STA 516



VIEW LOOKING AFT
AT STA 534



VIEW A


CABIN VIEW

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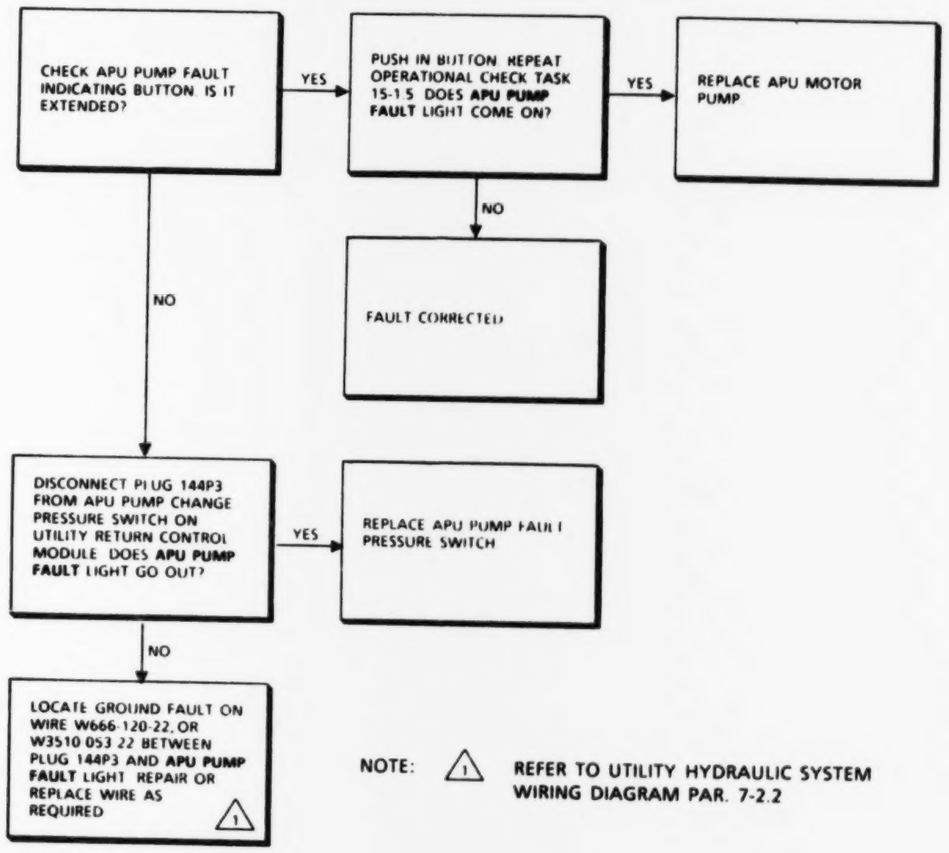
15-4.12 APU PUMP FAULT LIGHT IS ON (CONTINUED)


CHECK APU PUMP FAULT INDICATING BUTTON IS IT EXTENDED?
YES
PUSH IN BUTTON REPEAT OPERATIONAL CHECK TASK 15-1.5 DOES APU PUMP FAULT LIGHT COME ON?
YES
REPLACE APU MOTOR PUMP
NO
FAULT CORRECTED
NO
DISCONNECT PLUG 144P3 FROM APU PUMP CHANGE PRESSURE SWITCH ON UTILITY RETURN CONTROL MODULE DOES APU PUMP FAULT LIGHT GO OUT?
YES
REPLACE APU PUMP FAULT PRESSURE SWITCH
NO
LOCATE GROUND FAULT ON WIRE W666-120-22, OR W3510 053 22 BETWEEN PLUG 144P3 AND APU PUMP FAULT LIGHT REPAIR OR REPLACE WIRE AS REQUIRED
1

NOTE: 1 REFER TO UTILITY HYDRAULIC SYSTEM WIRING DIAGRAM PAR. 7-2.2

END OF TASK

15-5 APU / ENGINE HYDRAULIC STARTER SYSTEM

PARAGRAPH 15-5

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APU / ENGINE HYDRAULIC STARTER SYSTEM TROUBLESHOOTING

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15-5.3	ENGINE START SYSTEM WIRING DIAGRAM (HYDRAULIC PORTION)	TASK	15-92
15-5.4	ENGINE HYDRAULIC STARTING SYSTEM VISUAL CHECK	TASK	15-95
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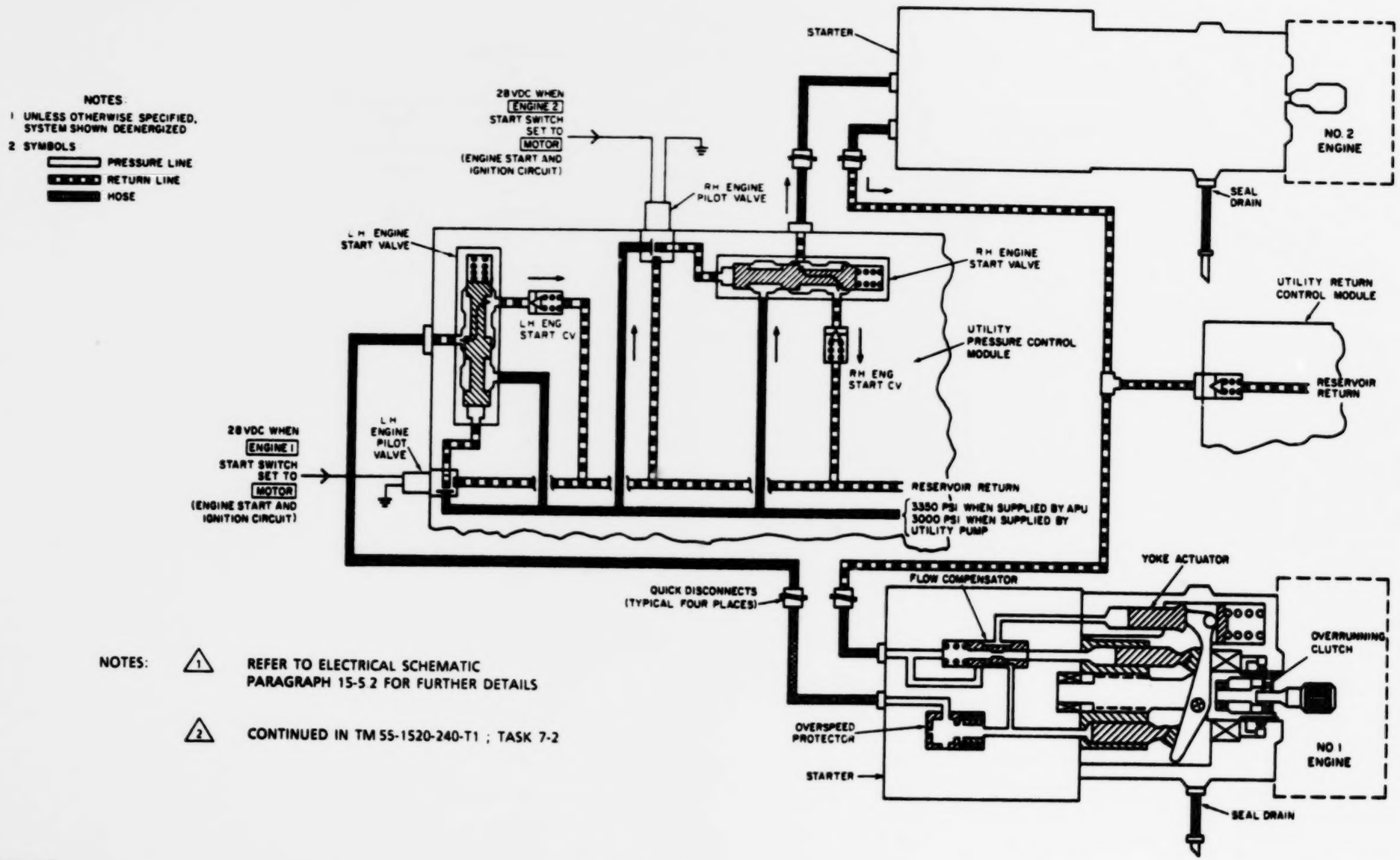
15-5 ENGINE HYDRAULIC STARTING SYSTEM

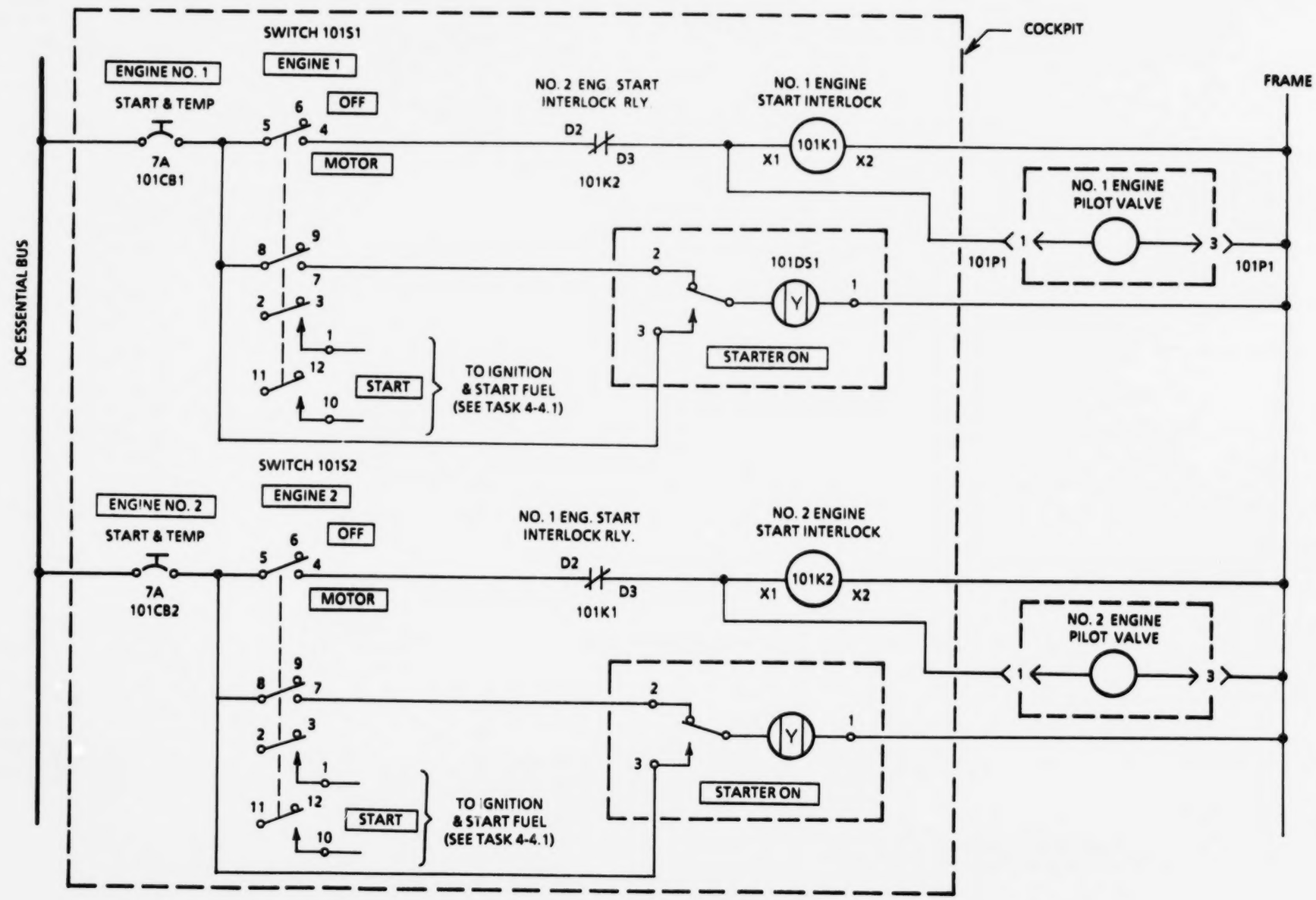
15-5.1 ENGINE HYDRAULIC STARTING SYSTEM SCHEMATIC



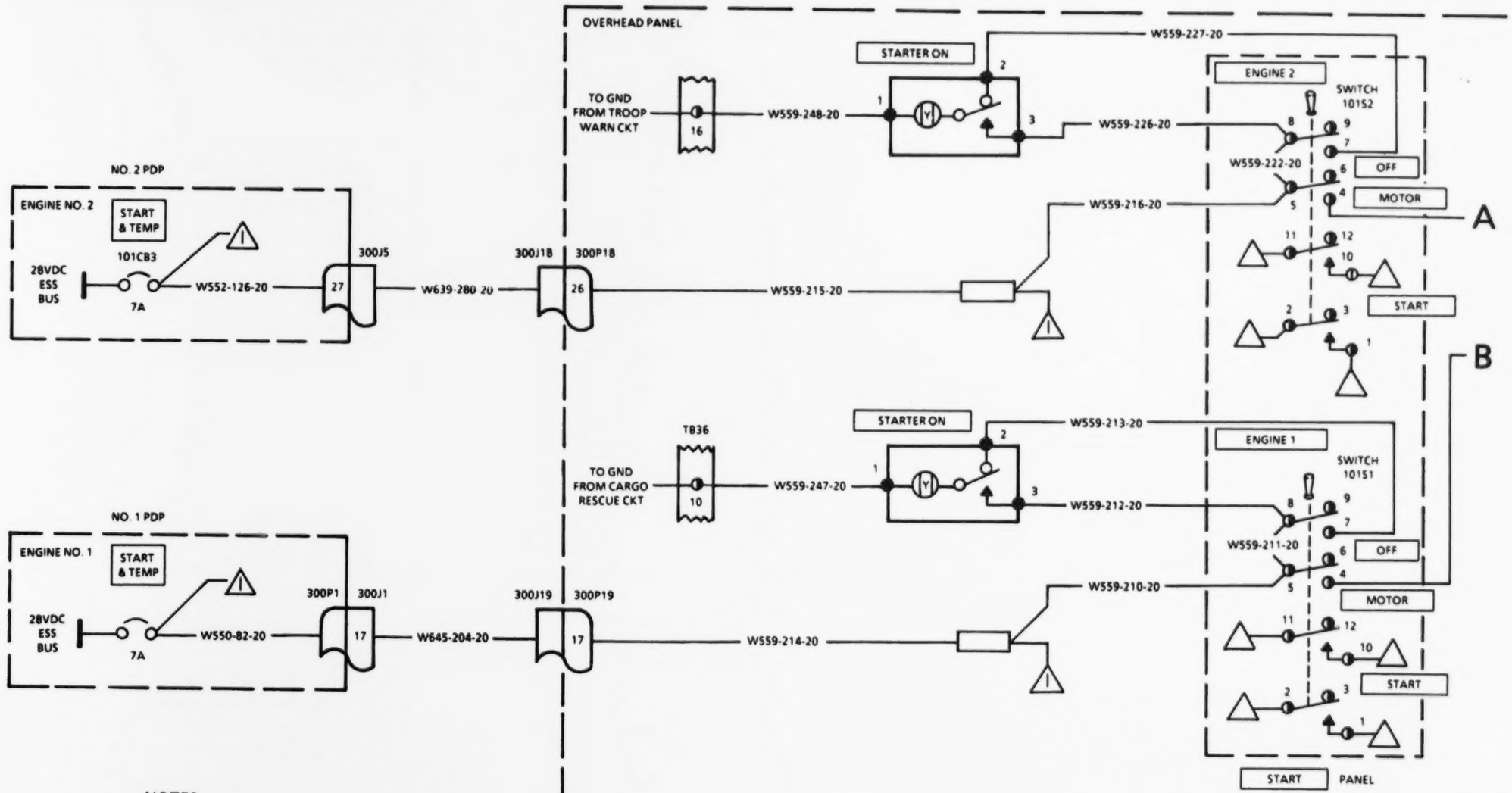
NOTES:

1. REFER TO ELECTRICAL SCHEMATIC PARAGRAPH 15-5 2 FOR FURTHER DETAILS
2. CONTINUED IN TM 55-1520-240-T1 ; TASK 7-2

15-5.2 ENGINE START SYSTEM ELECTRICAL SCHEMATIC (HYDRAULIC PORTION)



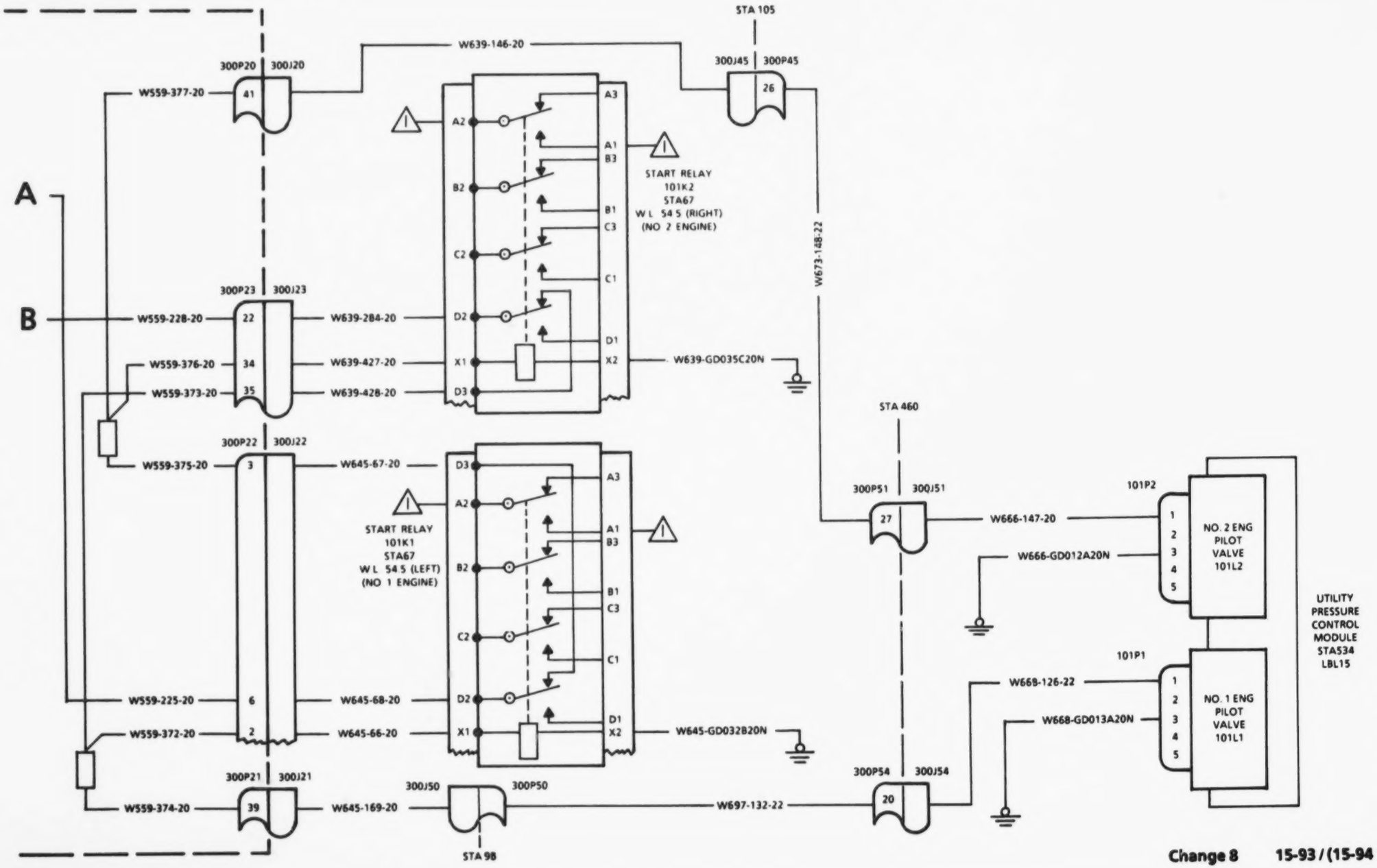
15-5.3 ENGINE START SYSTEM WIRING DIAGRAM (HYDRAULIC PORTION)



NOTES:

⚠ CONTINUED ON ENGINE START AND IGNITION SYSTEM-TASK 4-4.2

15-5.3 ENGINE START SYSTEM WIRING DIAGRAM (HYDRAULIC PORTION – CONTINUED)



15-5.4 ENGINE HYDRAULIC STARTING SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

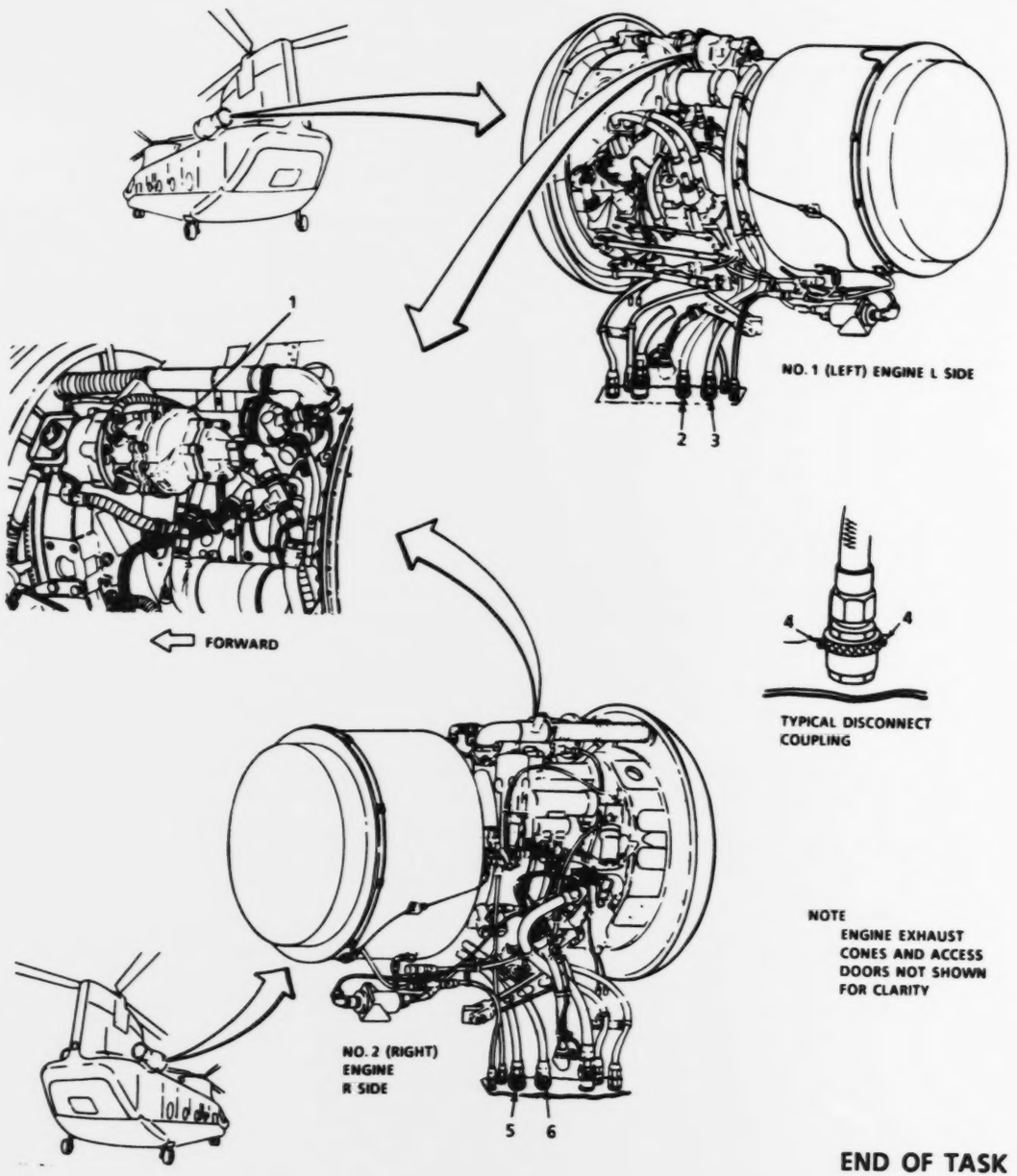
Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
No. 1 or No. 2 Engine Work
Platforms and Access Doors Open

TASK	RESULT
CHECK NO. 1 ENGINE STARTER INSTALLATION	
1. **Check No. 1 engine starter (1).**	If starter (1) is loose of damaged, tighten or replace it as required.
2. **Check disconnect couplings (2 and 3)** for extended buttons (4) or evidence of leaks.	If coupling (2 or 3) is not secured or buttons (4) are not extended, connect coupling. If buttons are still not extended, replace coupling. If buttons are extended and leaks are evident, repair or replace coupling or replace hose.
CHECK NO. 2 ENGINE STARTER INSTALLATION	
3. **Check No. 2 engine starter (1).**	If starter (1) is loose or damaged, tighten or replace it as required.
4. **Check disconnect couplings (5 and 6)** for extended buttons (4) or evidence of leaks.	If coupling (5 or 6) is not secured or buttons (4) are not extended, connect coupling. If buttons are still not extended, replace coupling. If buttons are extended and leaks are evident, repair or replace coupling or replace hose.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Close No. 1 or No. 2 Engine Work Platform
and Access Door



TYPICAL DISCONNECT COUPLING

NOTE
ENGINE EXHAUST CONES AND ACCESS DOORS NOT SHOWN FOR CLARITY

END OF TASK

15-5.5 ENGINE HYDRAULIC STARTING SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

References:
TM 55-1520-240-23

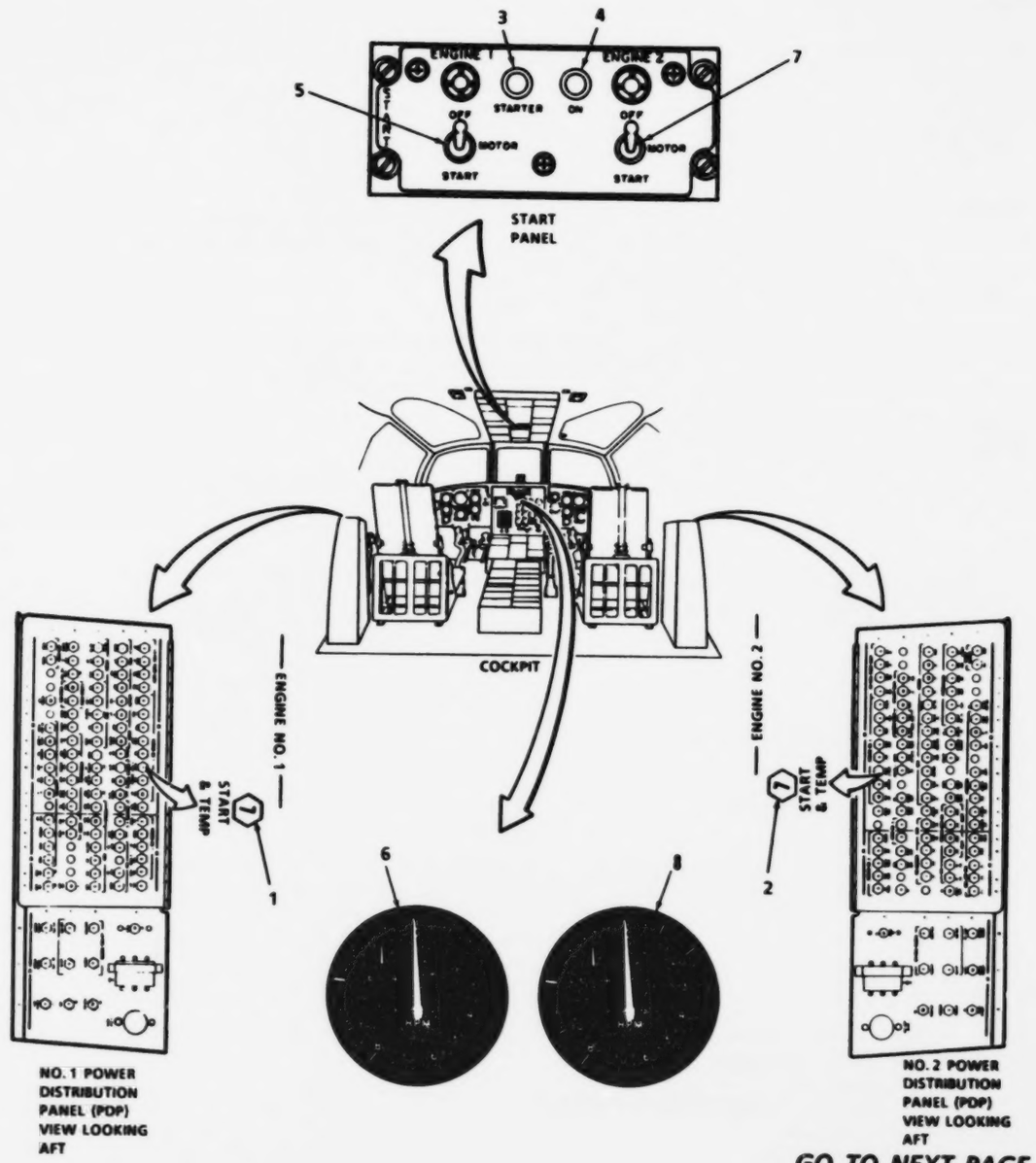
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
Ignition Switch Key Removed

General Safety Instructions:

WARNING

Make sure that rotor blades are clear of obstructions and that personnel are aware that rotor blades may turn during engine motoring. Turning blades can cause damage or serious injury to personnel.

TASK	RESULT
1. **Check that ENGINE NO. 1 START & TEMP circuit breaker (1) is closed.**	If START & TEMP circuit breaker (1) is open, close it. If it opens again, go to task 4-4.6.
2. **Check that ENGINE NO. 2 START & TEMP circuit breaker (2) is closed.**	If START & TEMP circuit breaker (2) is open, close it. If it opens again, go to task 4-4.8.
3. **Press and release ENGINE 1 STARTER ON light (3).**	Light (3) shall momentarily come on. If it does not light, go to task 4-4.9.
4. **Press and release ENGINE 2 STARTER ON light (4).**	Light (4) shall momentarily come on. If it does not light, go to task 4-4.10.
MOTOR NO. 1 ENGINE	
5. **Set ENGINE 1 START switch (5) to MOTOR.**	ENGINE 1 STARTER ON light (3) shall come on. NO. 1 ENGINE gas producer tachometer (6) shall indicate 10 to 15% N1 as starter motors engine. If ENGINE 1 STARTER light does not come on, go to task 4-4.9. If engine does not motor, go to task 15-5.6.



GO TO NEXT PAGE

15-5.5 ENGINE HYDRAULIC STARTING SYSTEM OPERATIONAL CHECK (CONTINUED)

TASK	RESULT
6. **Set ENGINE 1 START switch (5) to OFF.**	NO. 1 ENGINE gas producer tachometer (6) indication shall decrease to 0. If tachometer indication does not decrease or engine continues to motor, go to task 15-5.7.
MOTOR NO. 2 ENGINE	
7. **Set ENGINE 2 START switch (7) to MOTOR.**	ENGINE 2 STARTER ON light (4) shall come on. NO. 2 ENGINE gas producer tachometer (8) shall indicate 10 to 15% N1 as starter motors engine. If ENGINE 2 STARTER ON light does not come on, go to task 4-4.10. If engine does not motor, go to task 15-5.6.
8. **Set ENGINE 2 START switch (7) to OFF.**	NO. 2 ENGINE gas producer tachometer (8) indication shall decrease to 0. If tachometer indication does not decrease or engine continues to motor, go to task 15-5.7.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

END OF TASK

15-5.6 NO. 1 OR NO. 2 ENGINE DOES NOT MOTOR (HYDRAULIC SYSTEM)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

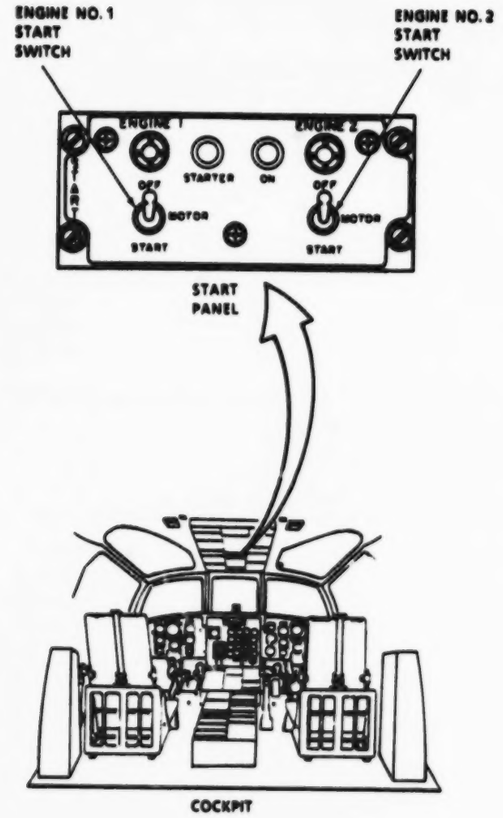
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

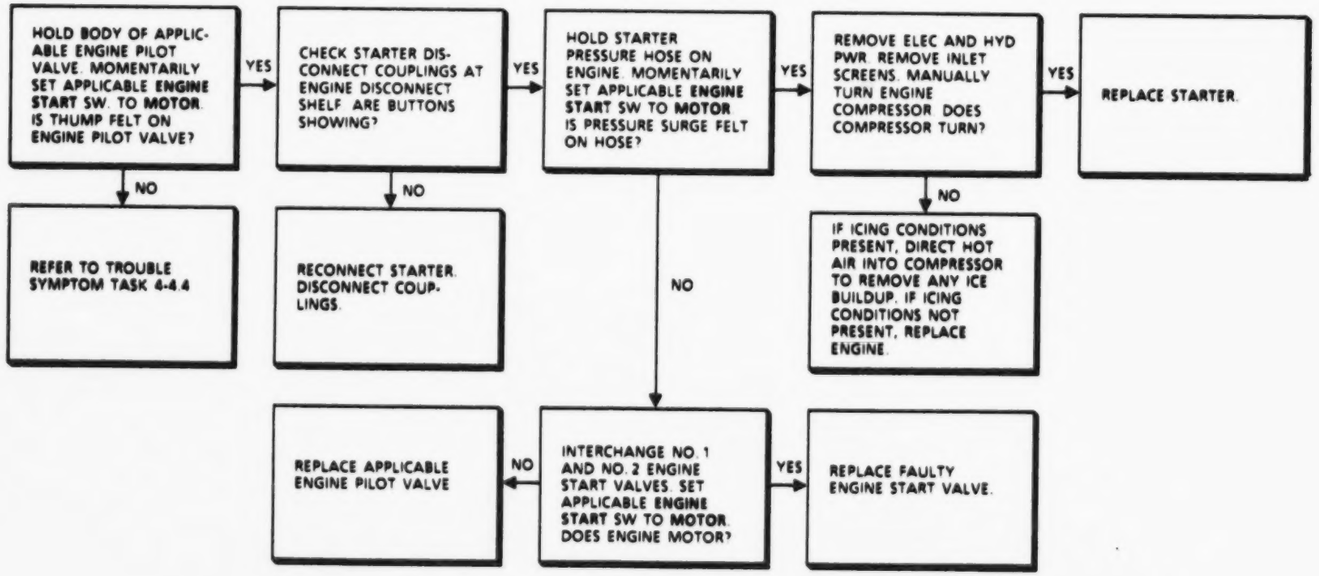
Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

References:
TM 55-1520-240-23

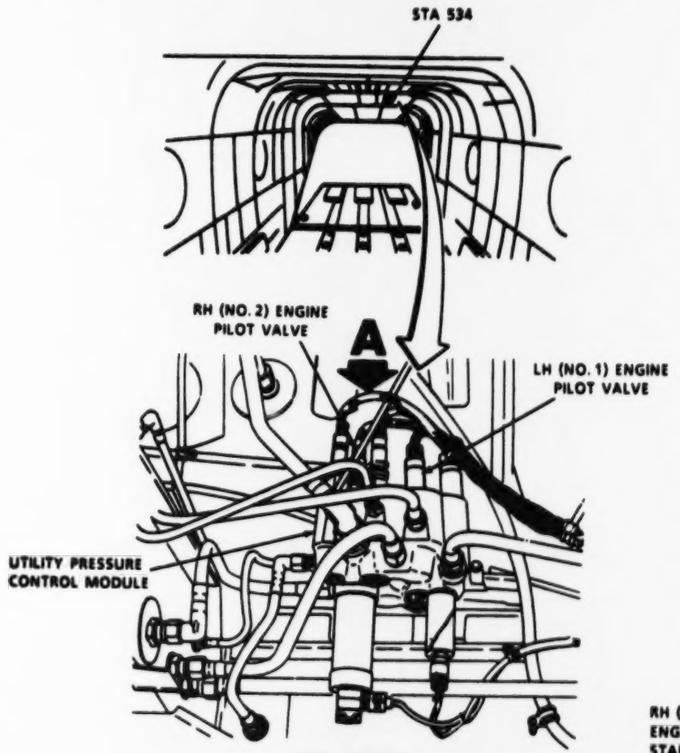
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
No. 1 or No. 2 Engine Work
Platforms and Access Doors Open



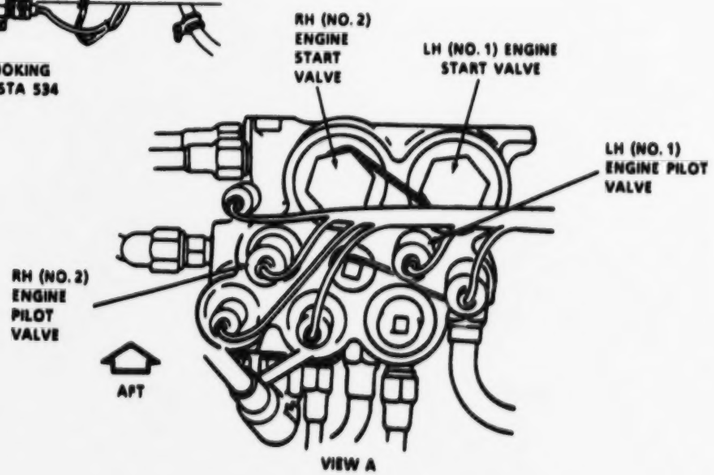

HOLD BODY OF APPLICABLE ENGINE PILOT VALVE. MOMENTARILY SET APPLICABLE ENGINE START SW. TO MOTOR. IS THUMP FELT ON ENGINE PILOT VALVE?
YES
CHECK STARTER DISCONNECT COUPLINGS AT ENGINE DISCONNECT SHELF. ARE BUTTONS SHOWING?
YES
HOLD STARTER PRESSURE HOSE ON ENGINE. MOMENTARILY SET APPLICABLE ENGINE START SW TO MOTOR. IS PRESSURE SURGE FELT ON HOSE?
YES
REMOVE ELEC AND HYD PWR. REMOVE INLET SCREENS. MANUALLY TURN ENGINE COMPRESSOR. DOES COMPRESSOR TURN?
YES
REPLACE STARTER.
NO
REFER TO TROUBLE SYMPTOM TASK 4-4.4
NO
RECONNECT STARTER. DISCONNECT COUPLINGS.
NO
IF ICING CONDITIONS PRESENT, DIRECT HOT AIR INTO COMPRESSOR TO REMOVE ANY ICE BUILDUP. IF ICING CONDITIONS NOT PRESENT, REPLACE ENGINE.
NO
REPLACE APPLICABLE ENGINE PILOT VALVE
NO
INTERCHANGE NO. 1 AND NO. 2 ENGINE START VALVES. SET APPLICABLE ENGINE START SW TO MOTOR. DOES ENGINE MOTOR?
YES
REPLACE FAULTY ENGINE START VALVE.

GO TO NEXT PAGE

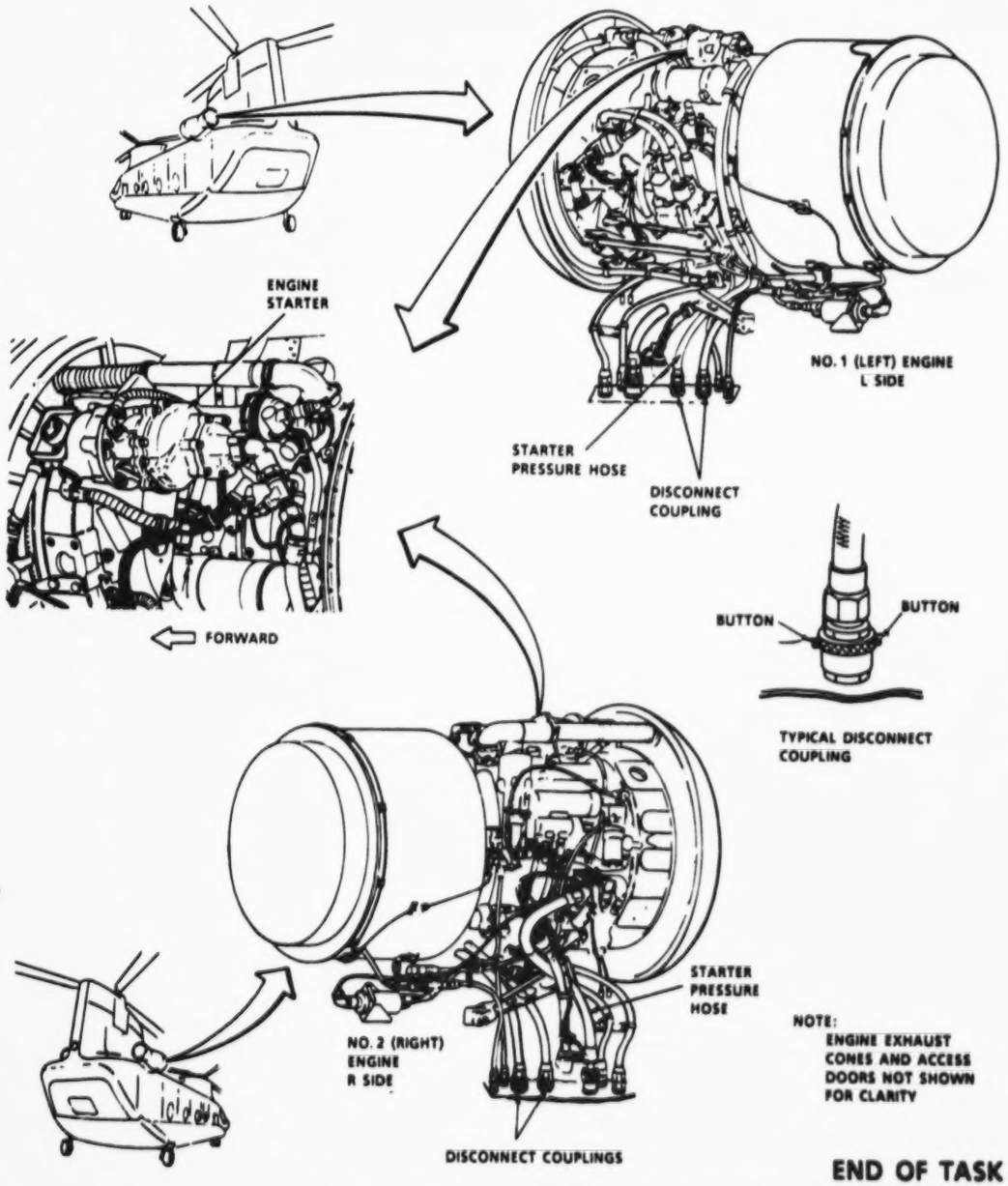
15-5.6 NO. 1 OR NO. 2 ENGINE DOES NOT MOTOR (HYDRAULIC SYSTEM – CONTINUED)



VIEW LOOKING AFT AT STA 534



VIEW A



NOTE:
ENGINE EXHAUST CONES AND ACCESS DOORS NOT SHOWN FOR CLARITY

END OF TASK

15-5.7 NO. 1 OR NO. 2 ENGINE KEEPS MOTORING WHEN ENGINE START SWITCH SET TO OFF

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

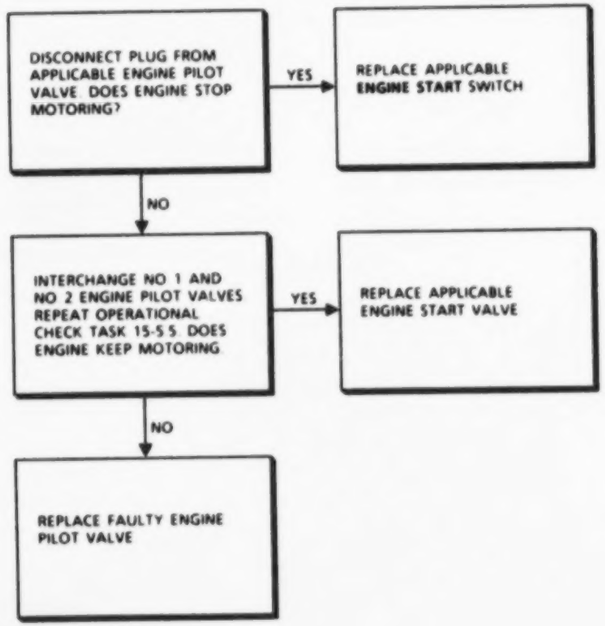
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

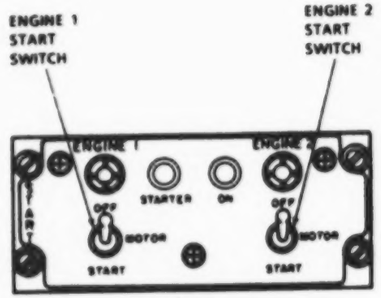
Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

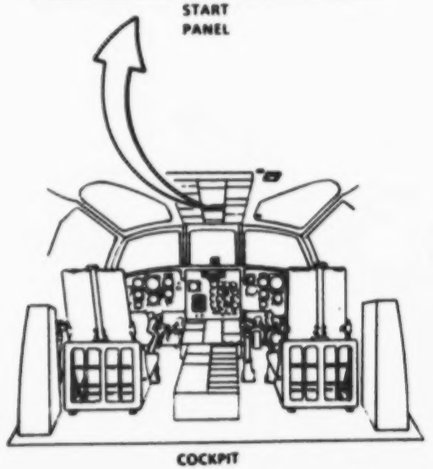
References:
TM 55-1520-240-23

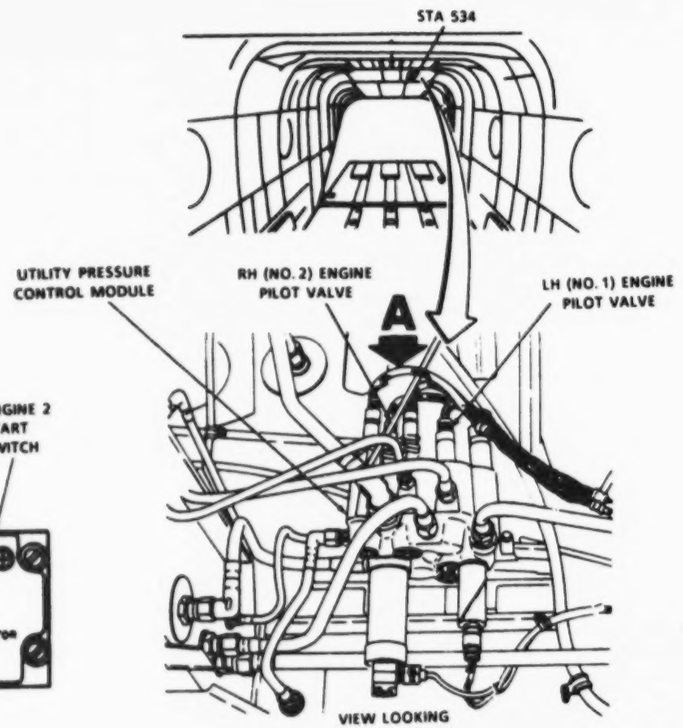
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On


DISCONNECT PLUG FROM APPLICABLE ENGINE PILOT VALVE. DOES ENGINE STOP MOTORING?
YES
REPLACE APPLICABLE ENGINE START SWITCH
NO
INTERCHANGE NO 1 AND NO 2 ENGINE PILOT VALVES REPEAT OPERATIONAL CHECK TASK 15-5 5. DOES ENGINE KEEP MOTORING
YES
REPLACE APPLICABLE ENGINE START VALVE
NO
REPLACE FAULTY ENGINE PILOT VALVE

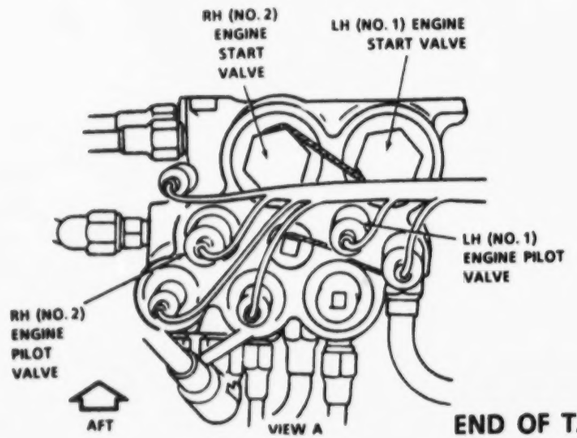


START PANEL


COCKPIT



VIEW LOOKING AFT AT STA 534



END OF TASK

15-6 MICROPROCESSOR ELECTRONIC SEQUENCE UNIT (ESU)

PARAGRAPH 15-6

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15-6.3	APU **STARTING** SEQUENCE FAILURE AND ESU P.C. BOARDS FAILURE TABLES	TABLES	15-109
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15-6.5	ESU SYSTEM WIRING DIAGRAM	DRAWING	15-111
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PARAGRAPH 15-6

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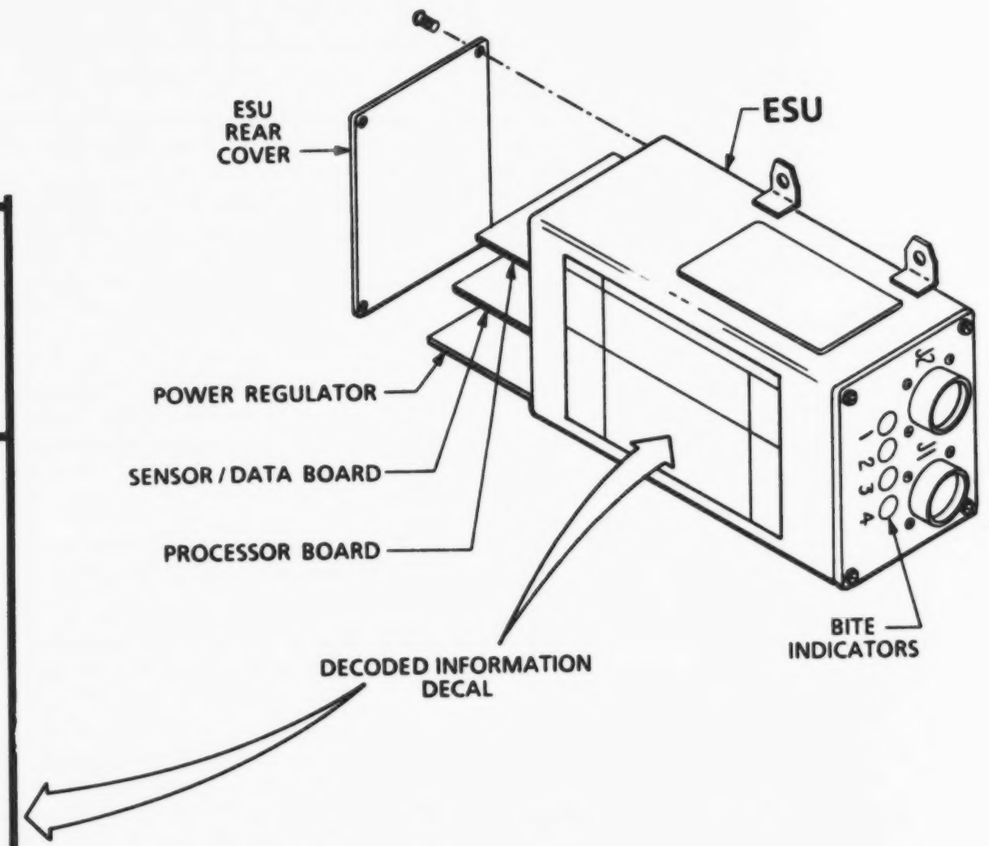
15-6.3	ESU PRINTED CIRCUIT BOARD FAILURES – BITE INDICATION TABLE	15-109

15-6 ELECTRONIC SEQUENCE UNIT (ESU)

15-6.1 ESU COMPONENTS

BITE 1 2 3 4	DECODED BITE INFORMATION	
● ● ● ●	RESET	START SEQUENCE
○ ● ● ●	START FUEL VALVE & EXCITER SIGNAL OUT (5%)	
○ ○ ● ●	MAIN FUEL VALVE SIGNAL OUT (14%)	
○ ○ ○ ●	START FUEL VALVE & EXCITER SIGNAL OFF (70%)	
○ ○ ○ ○	90% RPM SWITCH ON	
● ● ● ●	READY FOR SERVICE (90% + 1.5 SEC.)	OPERATION
○ ● ● ●	PROCESSOR BOARD FAILURE	
● ○ ● ●	SENSOR / DATA BOARD FAILURE	
○ ○ ● ●	OVERTEMPERATURE	
● ● ○ ●	OVERSPEED	
○ ● ○ ●	UNDERSPEED	
● ○ ○ ●	FAILURE TO START	
● ○ ● ○	SHORTED THERMOCOUPLE PROBE (WARNING)	
● ● ○ ○	OPEN THERMOCOUPLE	
● ○ ○ ○	PROCESSOR SEQUENCE FAIL	
○ ○ ○ ○	NO TEMP DATA	
○ ● ○ ○	NO SPEED DATA	



15-6.2 APU SYSTEMS BITE INDICATION FAILURE TABLE

TABLE NO. 15-6.1 BITE INDICATION TABLE FOR APU SYSTEMS FAILURES

NO.	BITE INDICATION	SYMPTOM	DECODED BITE DESCRIPTION	Maintenance Action Task No.
	APU DOES NOT MOTOR:			
1	○●●●	ESU Bite indicates ○●●●	PROCESSOR BOARD FAILURE	15-2.10
2	●○●●	ESU Bite indicates ●○●●	SENSOR/DATA BOARD FAILURE	15-2.10
3	●○○○	ESU Bite indicates ●○○○	PROCESSOR SEQUENCE FAIL	15-2.10
4	○○○○	ESU Bite indicates ○○○○	NO TEMP DATA	15-2.10
	APU MOTORS BUT DOES NOT START:			
5	○○●● then ●○○●	ESU Bite indicates ●○○●	FAILURE TO START	15-3.6
6	○○○● then ●○○●	ESU Bite indicates ●○○●	FAILURE TO START	15-3.7
7	○●●● or ○○●● then ●○○●	ESU Bite Indicates ●○○●	FAILURE TO START	15-4.11
8	○●○○	ESU Bite indicates ○●○○	NO SPEED DATA	15-6.11
9	○●●● or ○○●● then ●○○●	ESU Bite indicates ●○○●	FAJLURE TO START	15-6.12
10	○○○● then ●○○●	ESU Bite Indicates then ●○○●	FAILURE TO START	15-6.13

15-6.2 APU SYSTEMS BITE INDICATION FAILURE TABLE (CONTINUED)

TABLE NO. 15-6.1 BITE INDICATION TABLE FOR APU SYSTEMS FAILURES (Continued)

NO.	BITE INDICATION	SYMPTOM	DECODED BITE DESCRIPTION	Maintenance Action Task No.
	APU STARTS BUT SHUTS DOWN			
11	○○○○ then ●●○●	ESU Bite indicates ●●○●	OVERSPEED	15-6.14
12	○○○● then ○●○●	ESU Bite indicates ○●○●	UNDERSPEED	15-6.15
13	○○○● then ○○●●	ESU Bite indicates ○○●●	OVERTEMPERATURE (HOT START)	15-6.16
14	○○●● then ●●○○	ESU Bite indicates ●●○○	OPEN THERMOCOUPLE	15-6.18
	APU STARTS AND RUNS BUT SHUTS DOWN			
15	○○○○ then ○○●●	ESU Bite indicates ○○●●	OVERTEMPERATURE (HOT START)	15-6.17
	APU STARTS AND RUNS			
16	●○●○	ESU Bite indicates ●○●○	SHORTED THERMO. PROBE (WARNING)	15-6.19
	APU SHUTS DOWN WHEN GEN APU SWITCH PLACED TO ON			
17	●●●●	ESU Bite indicates ●●●●	READY FOR SERVICE	15-2.14
	APU SHUTS DOWN WHEN APU GEN SWITCH IS SET TO OFF			
18		ESU Bite indicates	READY FOR SERVICE	15-2.15
	APU DOES NOT STOP			
19	●●●●	ESU Bite indicates ●●●●	READY FOR SERVICE	15-2.12

15-6.3 APU STARTING SEQUENCE FAILURE AND ESU P.C. BOARDS FAILURE TABLES

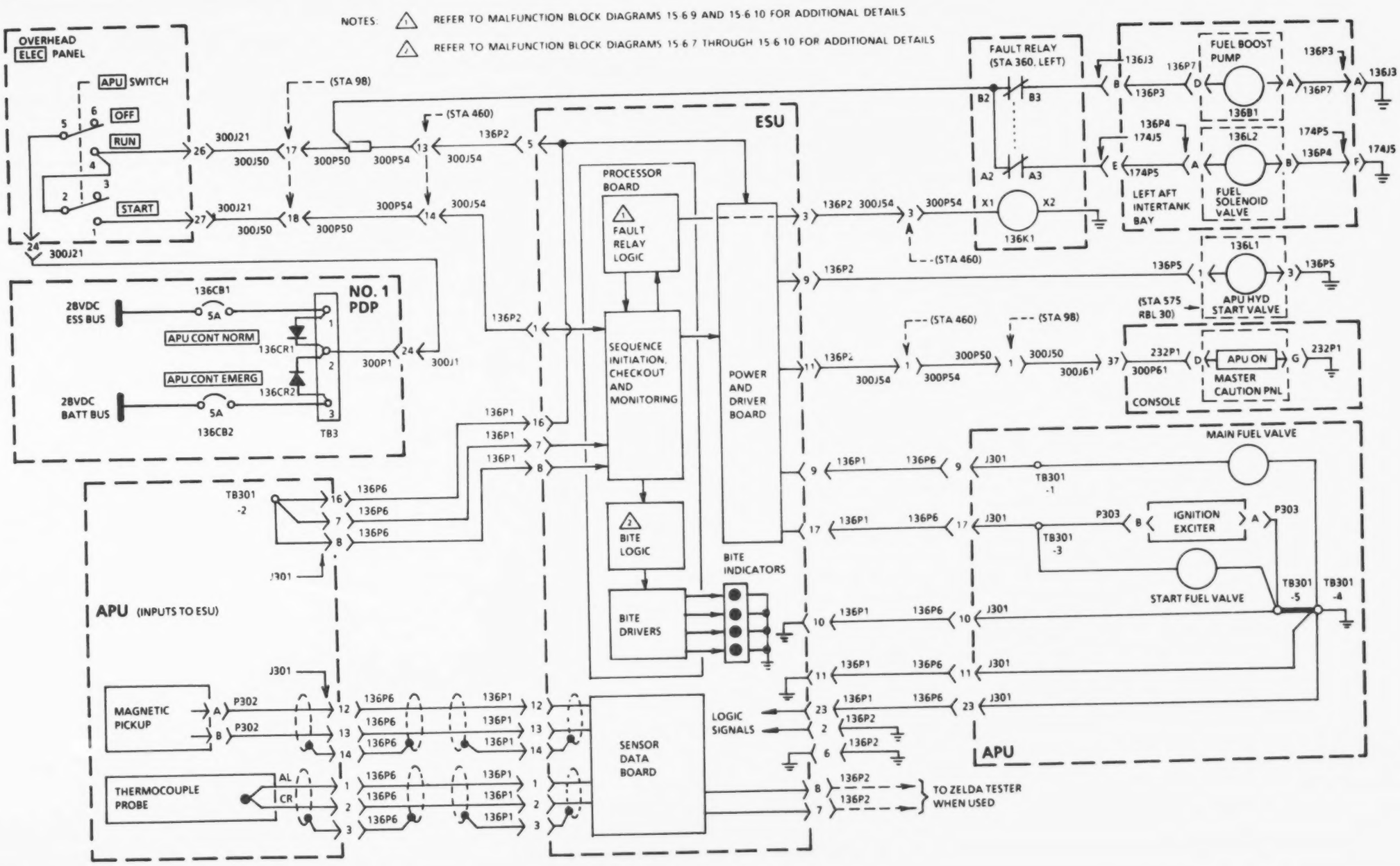
TABLE NO. 15-6.2 APU STARTING SEQUENCE FAILURES

APU STARTING SEQUENCE	No.	SYMPTOM	BITE INDICATION	DECODED BITE INFORMATION	TASK
PRE START					
	1	**APU DOES NOT MOTOR** ESU Bite indicates	○○○○	NO TEMP DATA	15-2.10
MOTORING					
	2	**APU MOTORS BUT DOES NOT START** ESU Bite indicates	○●○○	NO SPEED DATA	15-6.11
	3	**APU MOTORS BUT DOES NOT START** ESU Bite indicates	○●●● or ○○●● then ●○○●	FAILURE TO START	15-6.12
	4	**APU MOTORS BUT DOES NOT START** ESU Bite indicates	○○○● then ●○○●	FAILURE TO START	15-6.13
STARTING					
	5	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	●●○●	OVERSPEED	15-6.14
	6	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	○●○●	UNDERSPEED	15-6.15
	7	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	●●○○	OPEN THERMOCOUPLE	15-6.18
HOT START					
	8	**APU STARTS BUT SHUTS DOWN** ESU Bite indicates	○○●●	OVERTEMPERATURE	15-6.17
STARTS AND RUNS					
	9	**APU STARTS AND RUNS** but ESU Bite indicates	●○●○	SHORTED THERMO. PROBE (warning)	15-6.19

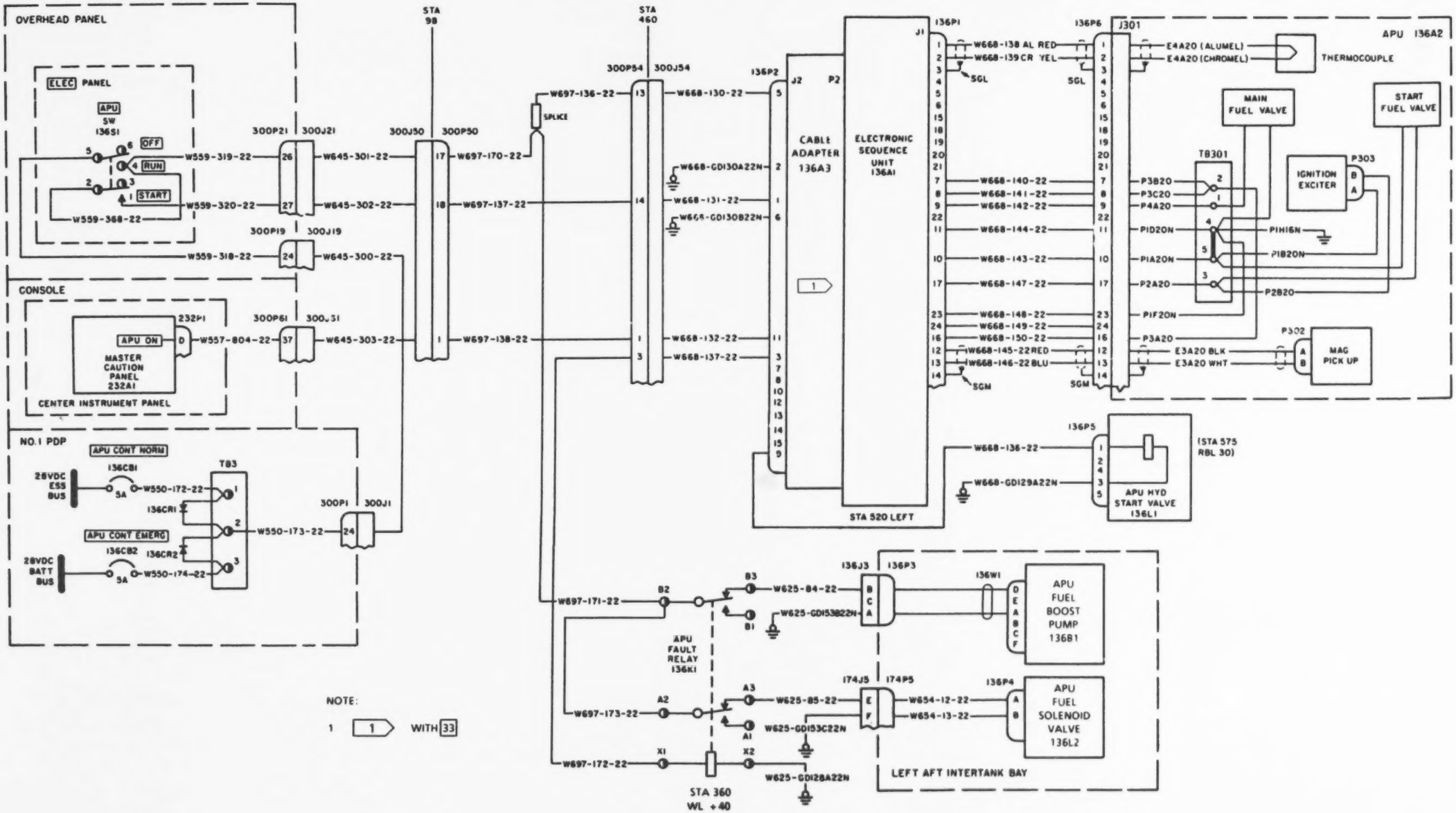
TABLE NO. 15-6.3
ESU PRINTED CIRCUIT BOARD FAILURES – BITE INDICATION TABLE

BITE INDICATION	BITE INFORMATION
○ ● ● ●	PROCESSOR BOARD FAILURE.
● ○ ● ●	SENSOR / DATA BOARD FAILURE.
● ○ ○ ○	PROCESSOR SEQUENCE FAIL

15-6.4 ESU SYSTEM SCHEMATIC



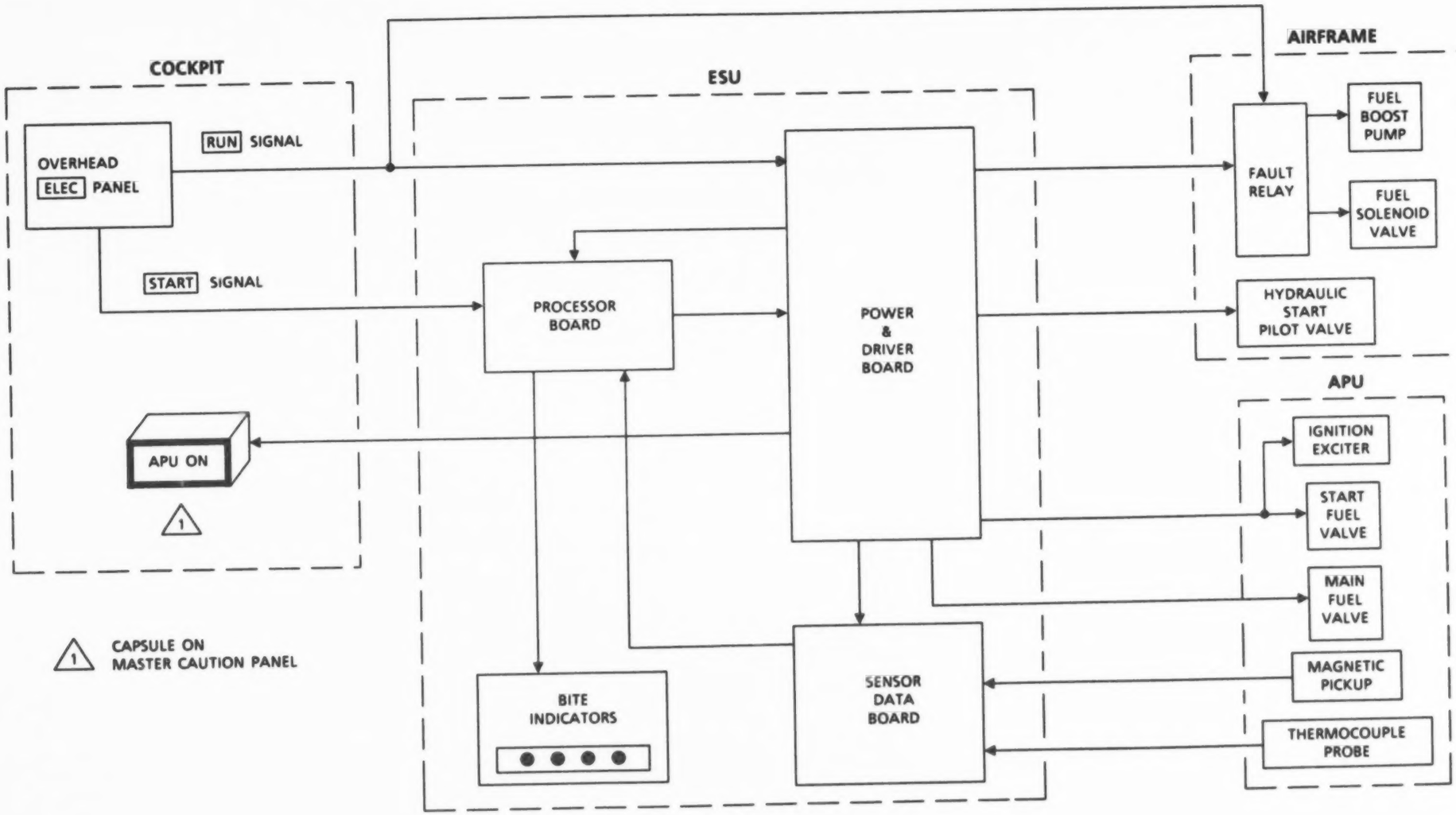
15-6.5 ESU SYSTEM WIRING DIAGRAM

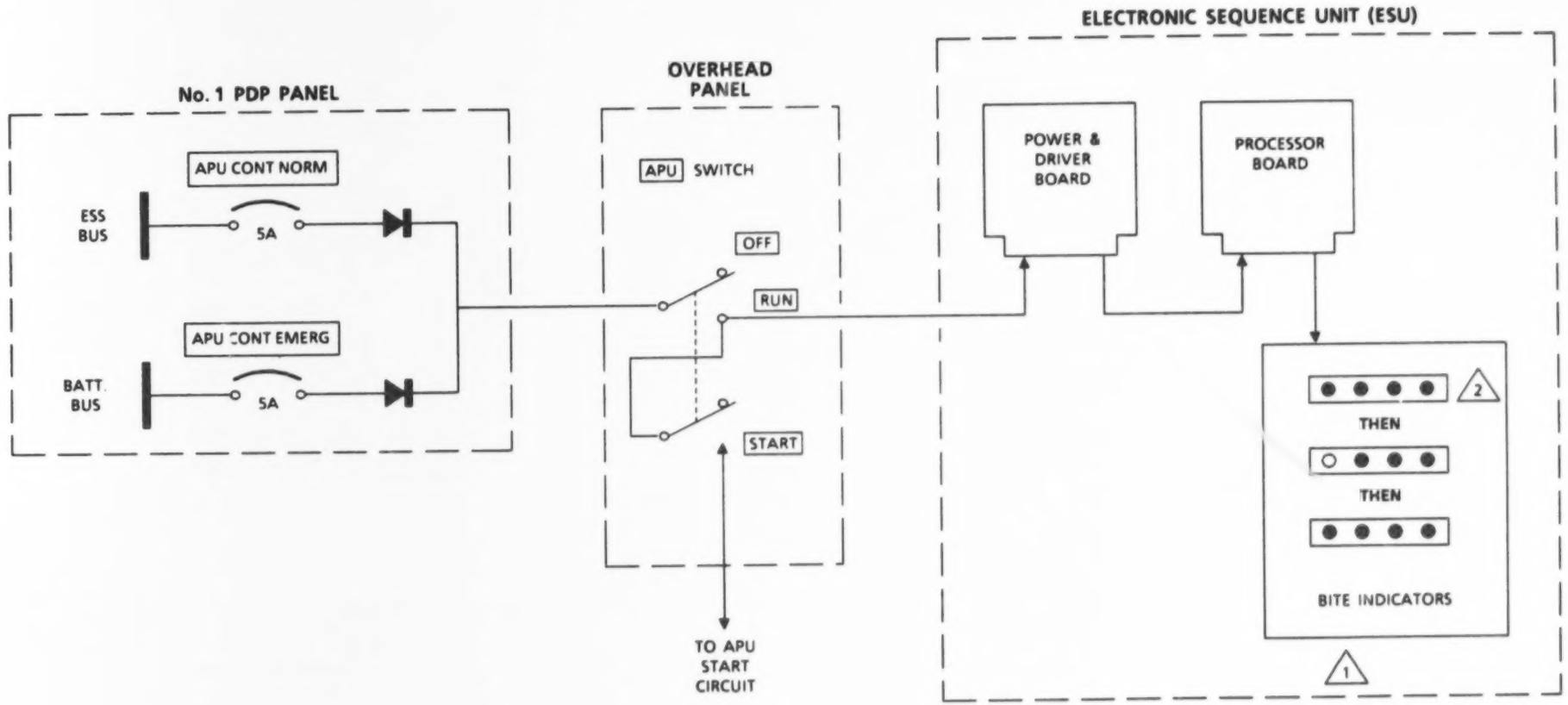


NOTE:

1 [1] WITH [33]

15-6.6 ESU BLOCK DIAGRAM

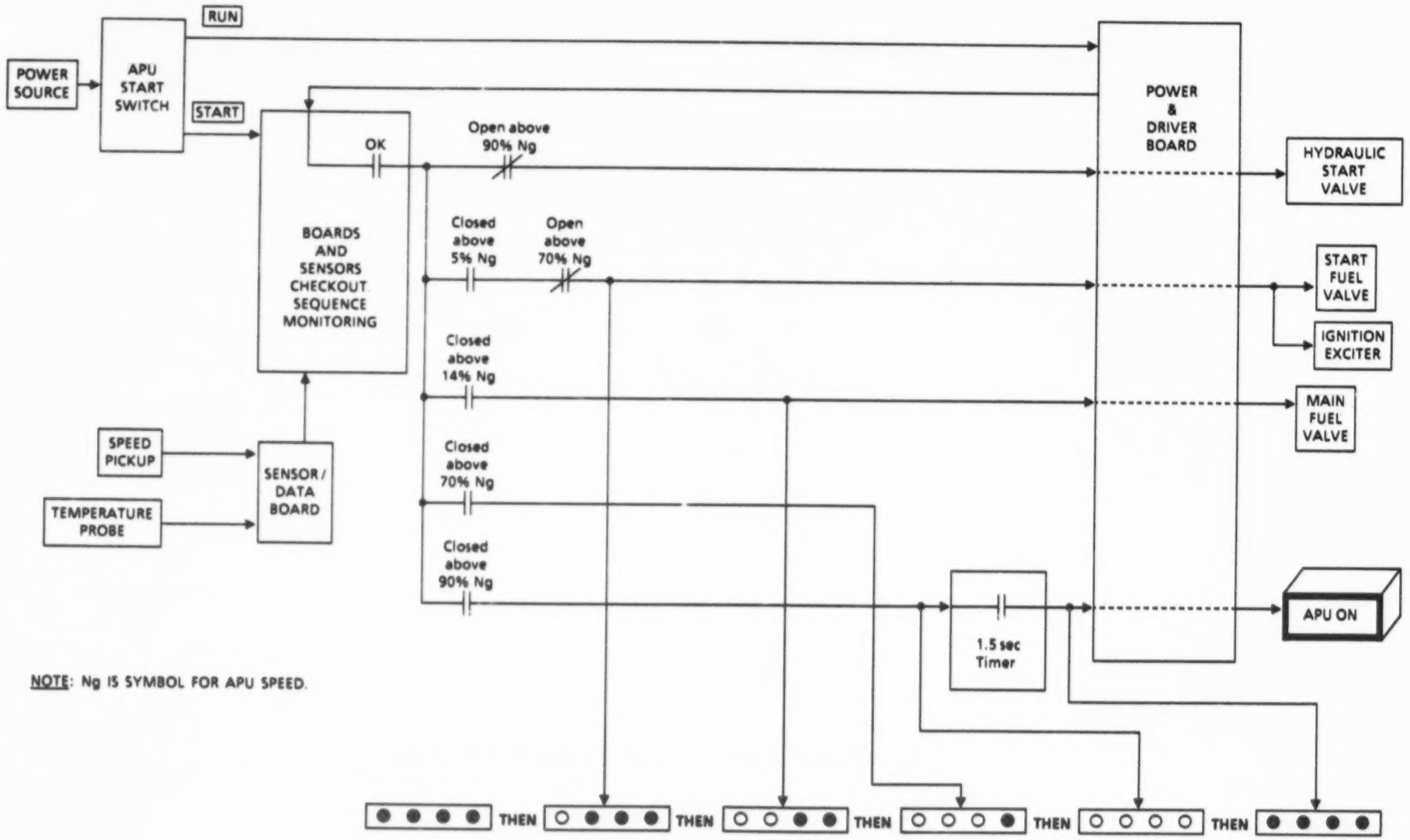




1 NORMAL BITE SEQUENCE WHEN APU IS MOVED FROM OFF TO RUN.

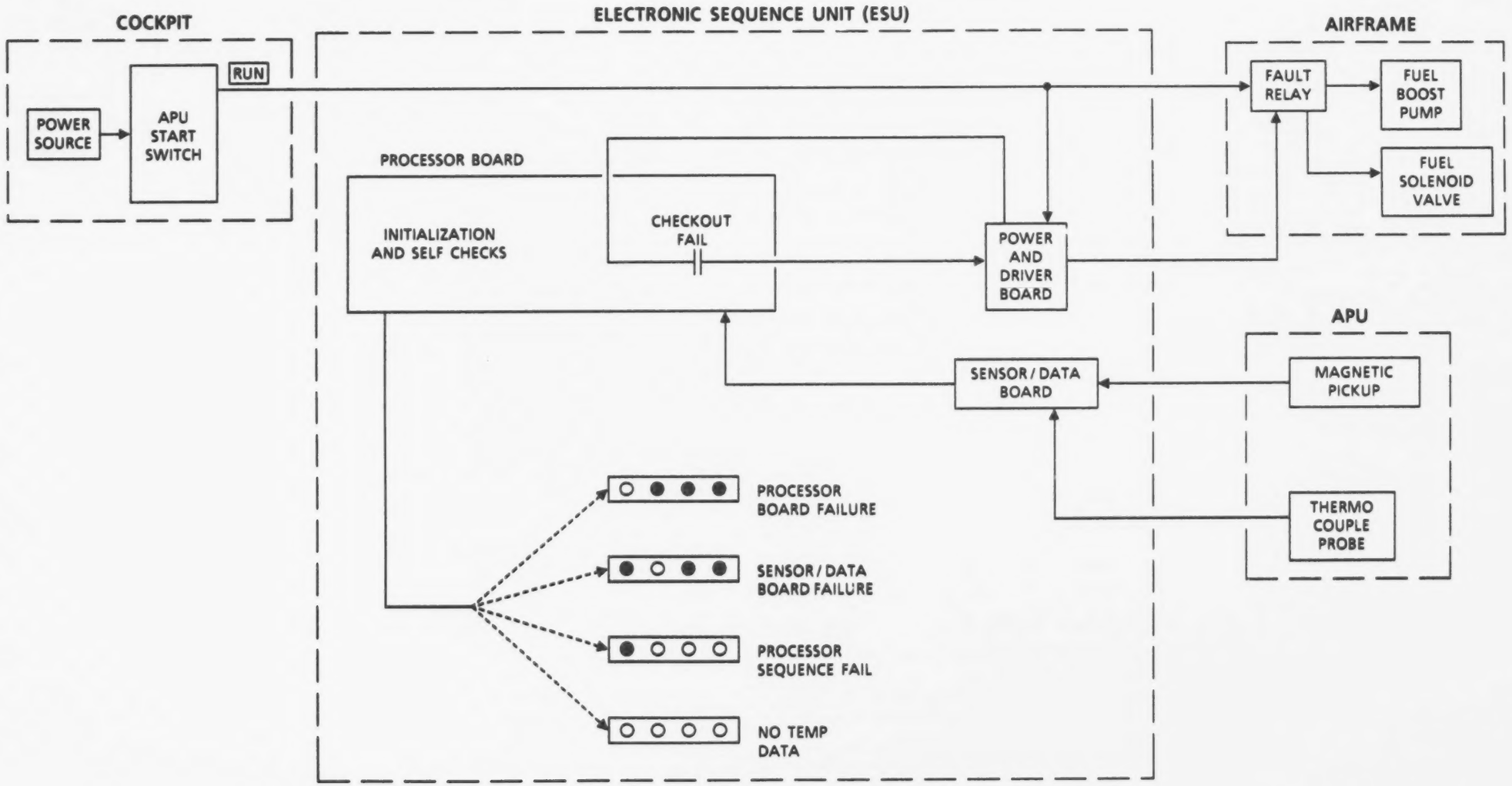
2 INITIAL INDICATION WILL SHOW A FAILURE CONDITION IF THE PREVIOUS APU SHUTDOWN WAS DUE TO A MALFUNCTION.

15-6.8 NORMAL START BITE LOGIC BLOCK DIAGRAM

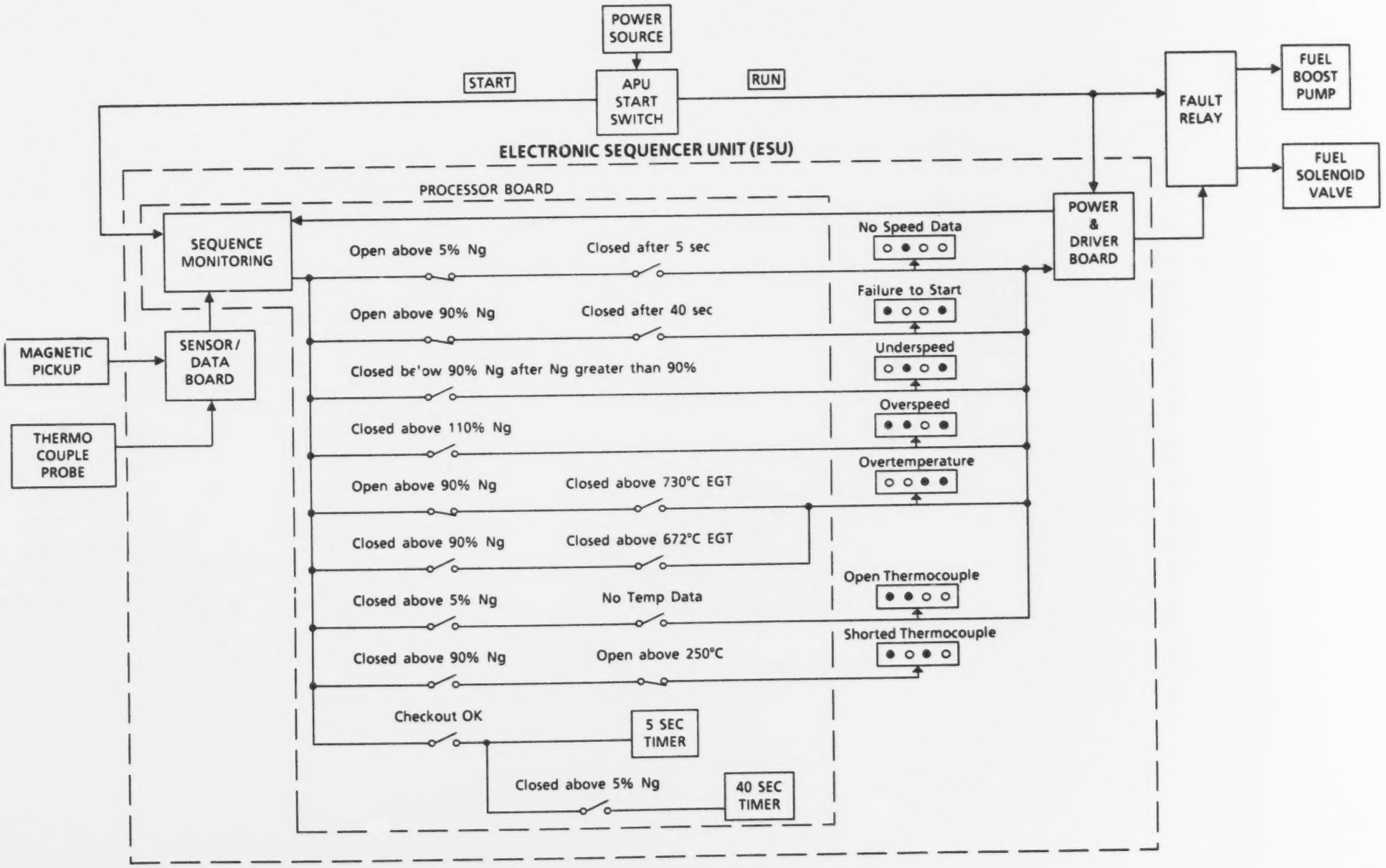


NOTE: Ng IS SYMBOL FOR APU SPEED.

15-6.9 MALFUNCTION BITE LOGIC BLOCK DIAGRAM (BEFORE START)



15-6.10 MALFUNCTION BITE LOGIC BLOCK DIAGRAM (DURING STARTING AND RUNNING)



15-6.11 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES (NO SPEED DATA) ○●○○

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

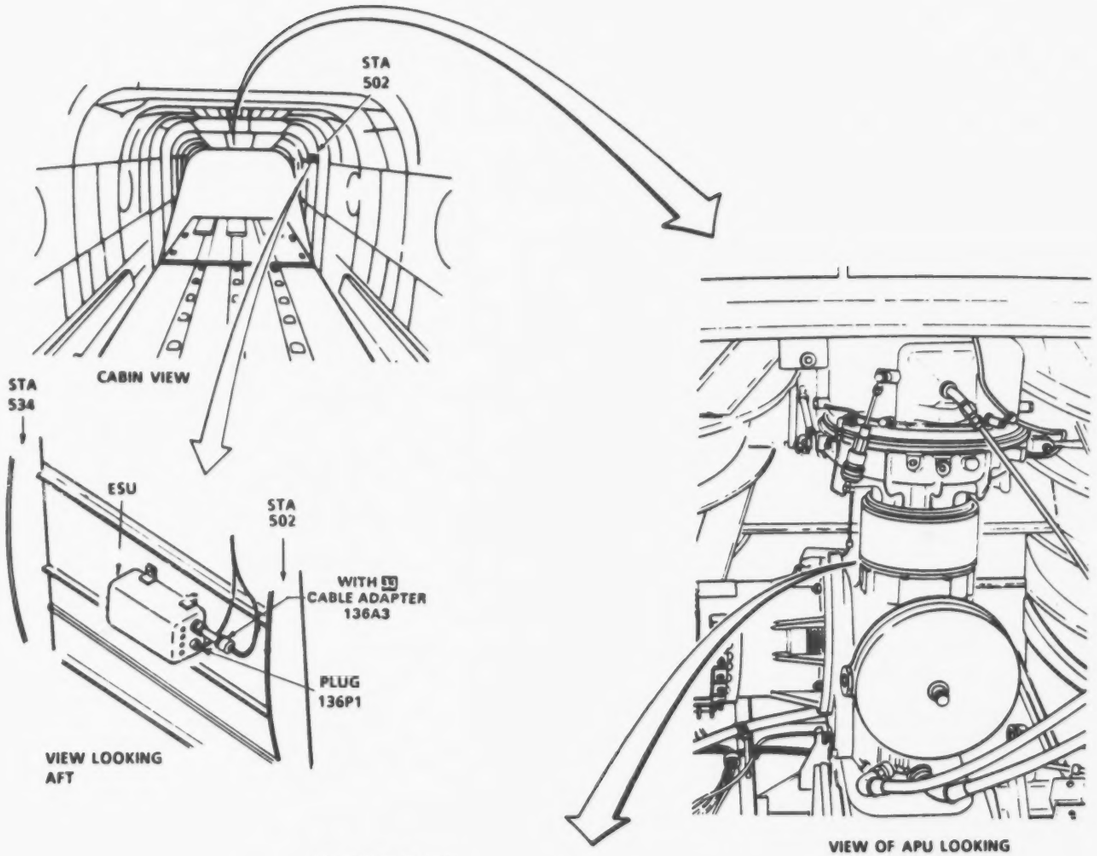
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-329-4915
Multimeter

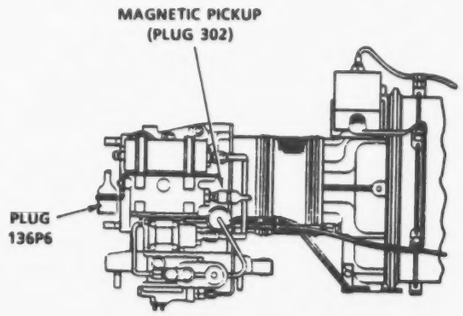
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off





TOP VIEW OF APU

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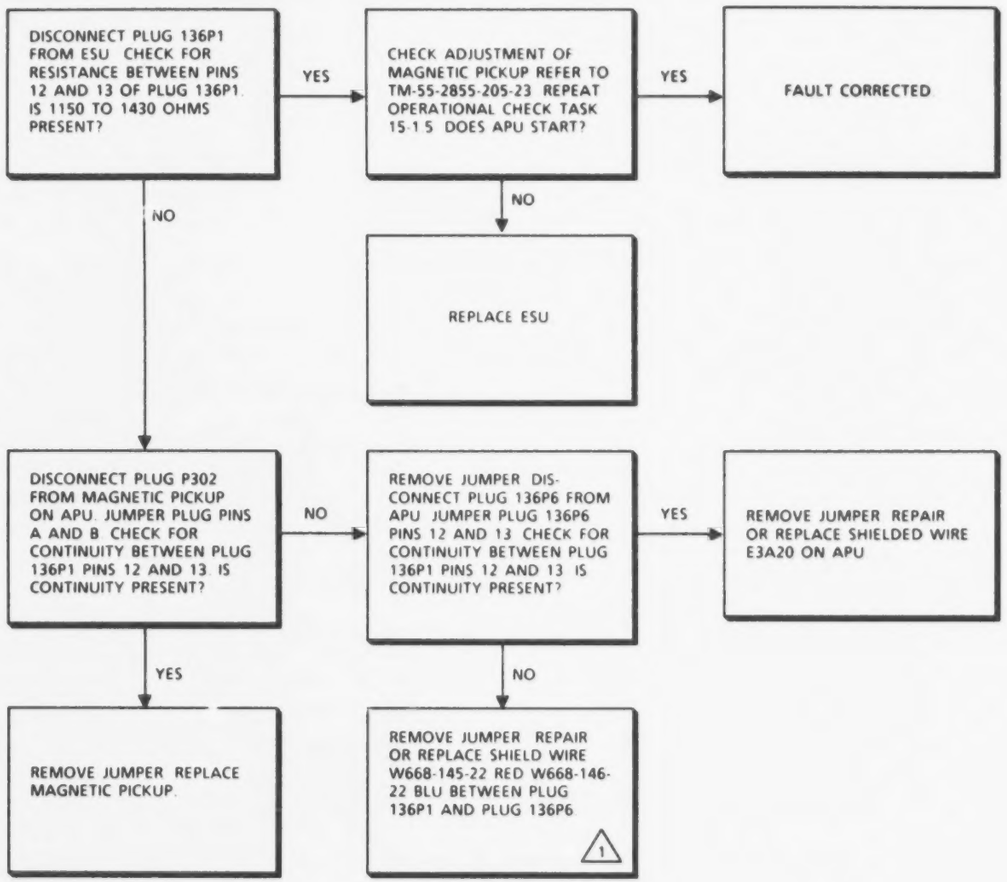
15-6.11 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES (NO SPEED DATA) (CONTINUED) ○ ● ○ ○


DISCONNECT PLUG 136P1 FROM ESU. CHECK FOR RESISTANCE BETWEEN PINS 12 AND 13 OF PLUG 136P1. IS 1150 TO 1430 OHMS PRESENT?
YES
CHECK ADJUSTMENT OF MAGNETIC PICKUP REFER TO TM-55-2855-205-23. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU START?
YES
FAULT CORRECTED
NO
REPLACE ESU
NO
DISCONNECT PLUG P302 FROM MAGNETIC PICKUP ON APU. JUMPER PLUG PINS A AND B. CHECK FOR CONTINUITY BETWEEN PLUG 136P1 PINS 12 AND 13. IS CONTINUITY PRESENT?
NO
REMOVE JUMPER. DISCONNECT PLUG 136P6 FROM APU. JUMPER PLUG 136P6 PINS 12 AND 13. CHECK FOR CONTINUITY BETWEEN PLUG 136P1 PINS 12 AND 13. IS CONTINUITY PRESENT?
YES
REMOVE JUMPER. REPAIR OR REPLACE SHIELDED WIRE E3A20 ON APU
YES
REMOVE JUMPER. REPLACE MAGNETIC PICKUP.
NO
REMOVE JUMPER. REPAIR OR REPLACE SHIELD WIRE W668-145-22 RED W668-146-22 BLU BETWEEN PLUG 136P1 AND PLUG 136P6
1

1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

END OF TASK

15-6.12 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ● ● ● OR ○ ○ ● ● THEN ● ○ ○ ● (FAILURE TO START)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter
APU Tester 161226-200

Materials:
Cloth (E120)
Tape (E385)

Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

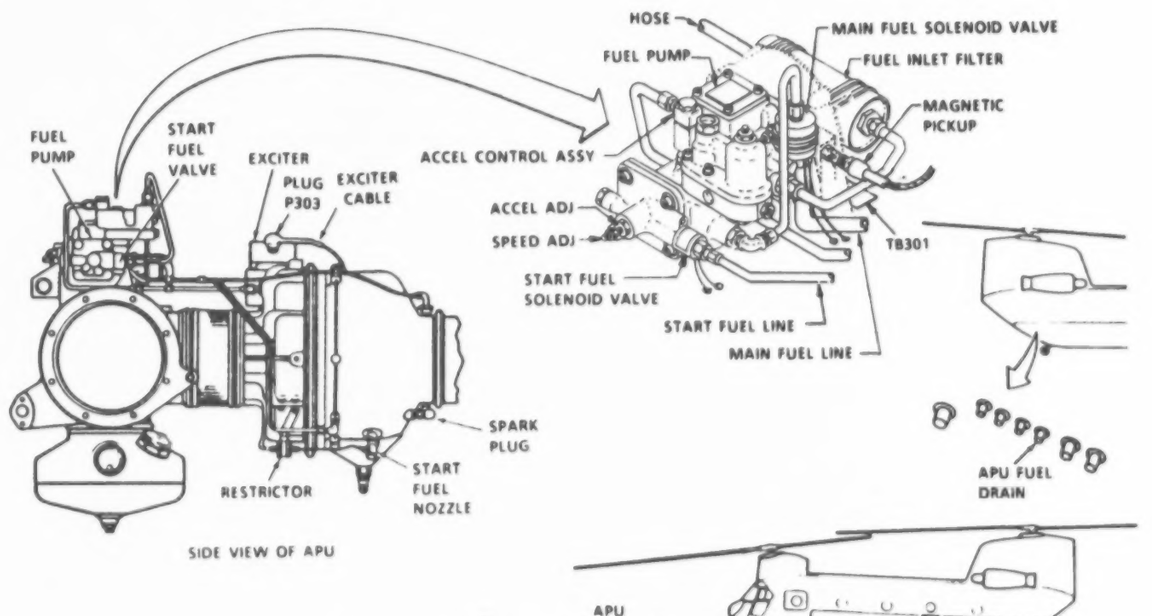
References:
TM 55-1520-240-23
TM 55-2835-205-23

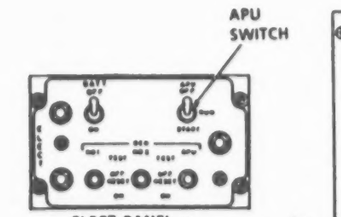
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

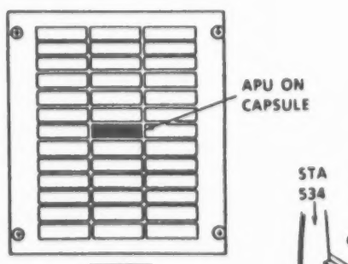
General Safety Instructions:

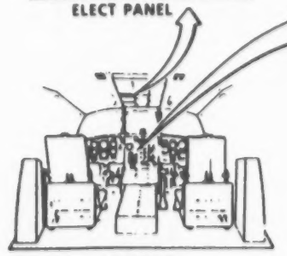
WARNING

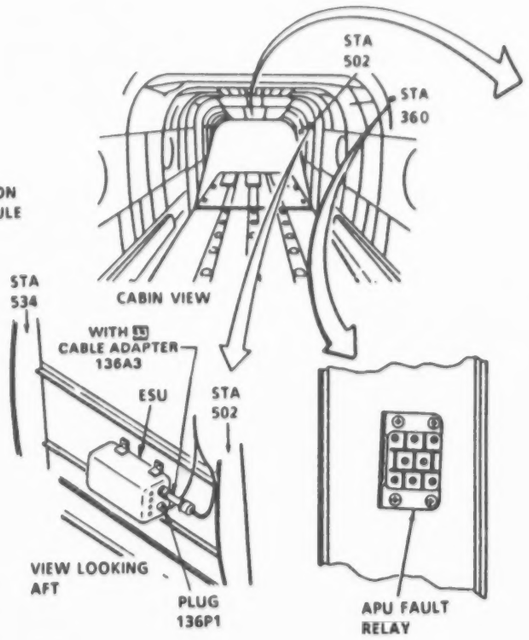
All regulations and instructions for handling fuels shall be strictly observed.

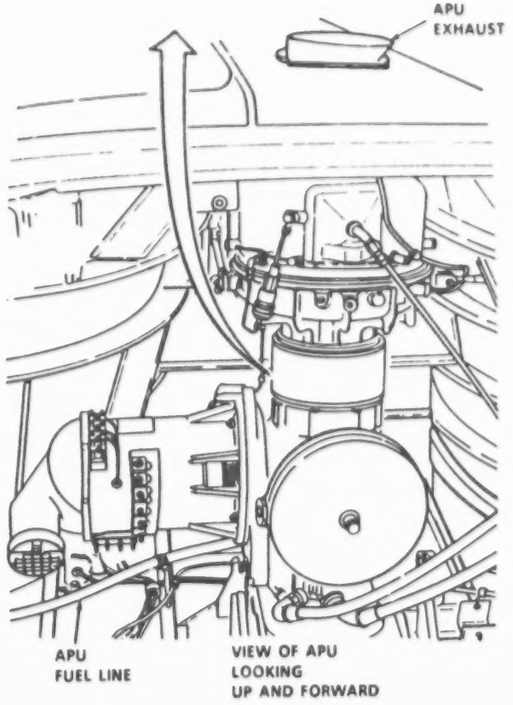


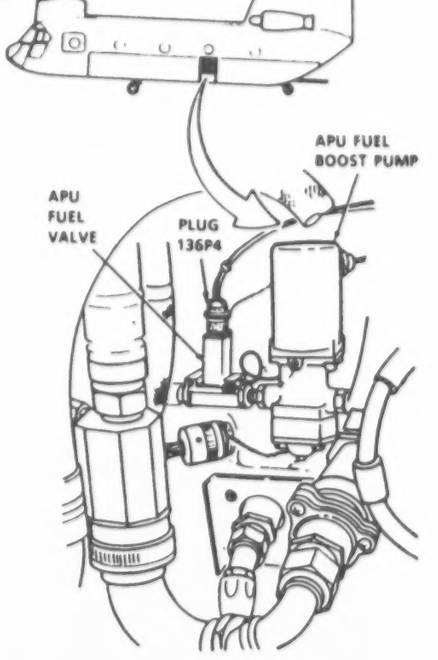












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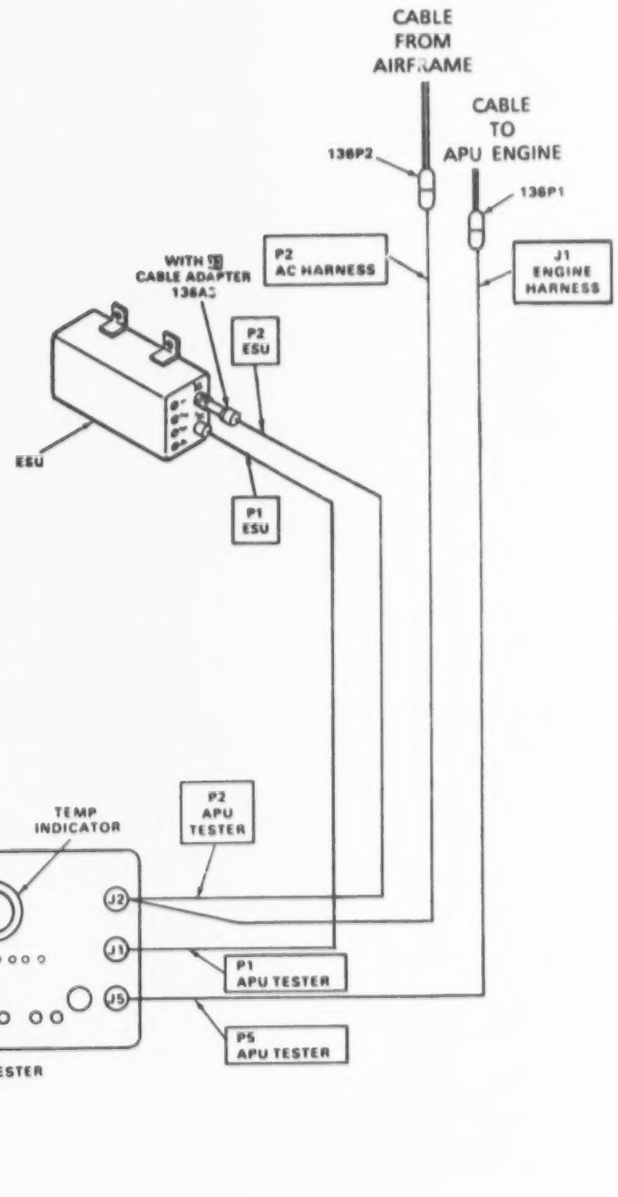
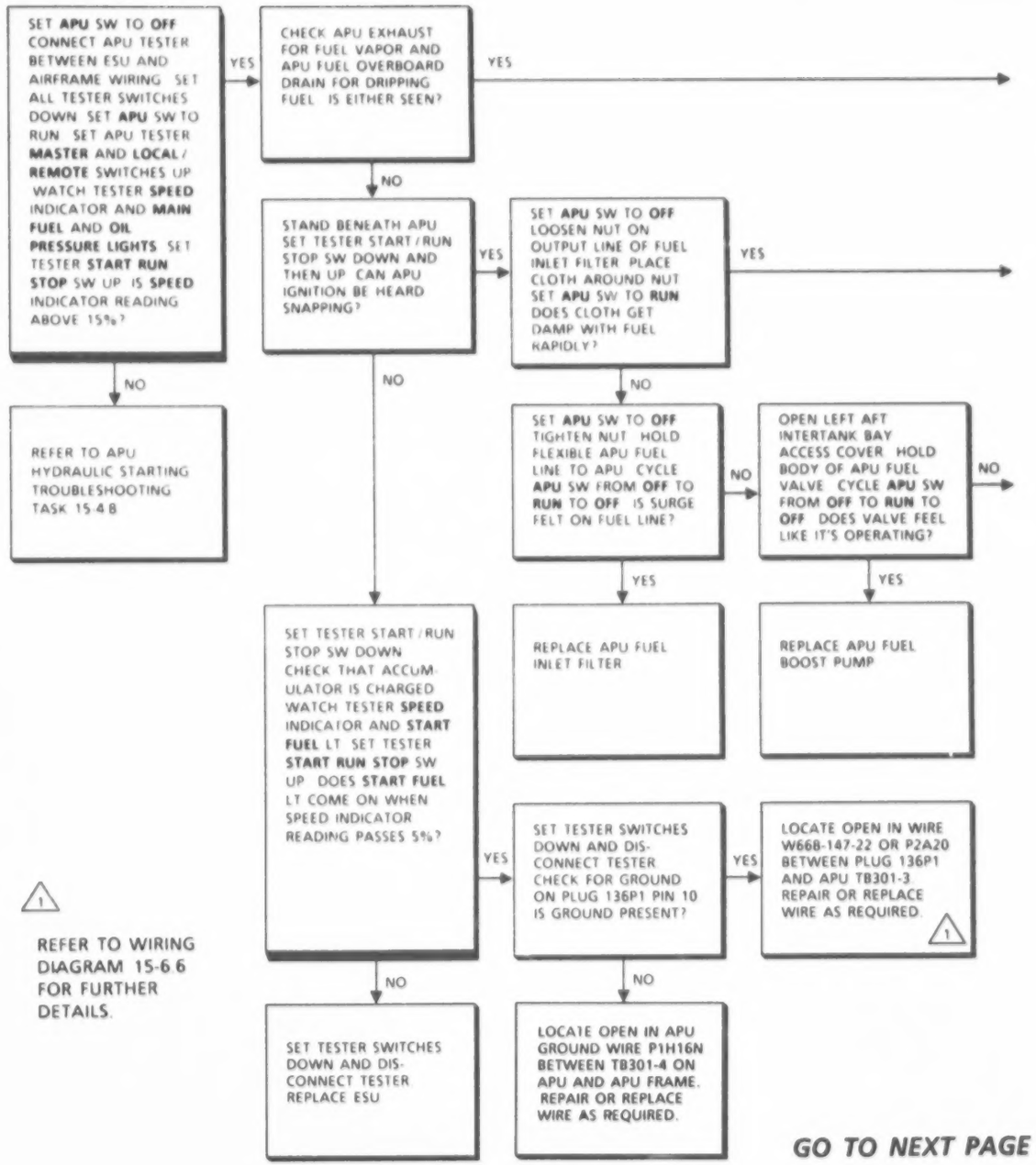
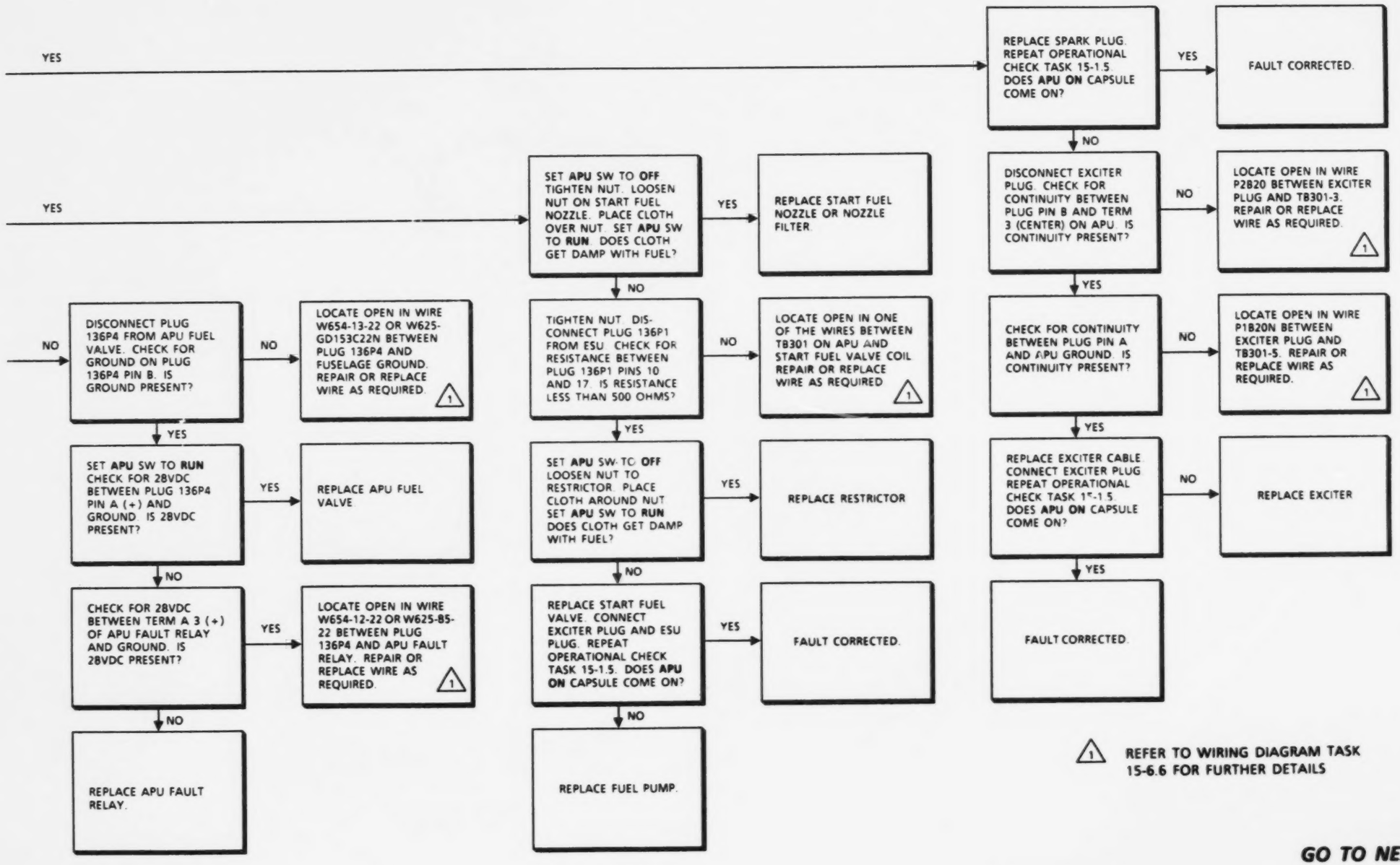
15-6.12 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ● ● ● OR ○ ○ ● ● THEN ● ○ ○ ● (FAILURE TO START) (CONTINUED)




SET APU SW TO OFF CONNECT APU TESTER BETWEEN ESU AND AIRFRAME WIRING SET ALL TESTER SWITCHES DOWN SET APU SW TO RUN SET APU TESTER MASTER AND LOCAL/REMOTE SWITCHES UP WATCH TESTER SPEED INDICATOR AND MAIN FUEL AND OIL PRESSURE LIGHTS SET TESTER START RUN STOP SW UP IS SPEED INDICATOR READING ABOVE 15%?
YES
CHECK APU EXHAUST FOR FUEL VAPOR AND APU FUEL OVERBOARD DRAIN FOR DRIPPING FUEL IS EITHER SEEN?
YES
NO
NO
REFER TO APU HYDRAULIC STARTING TROUBLESHOOTING TASK 15-48
STAND BENEATH APU SET TESTER START/RUN STOP SW DOWN AND THEN UP CAN APU IGNITION BE HEARD SNAPPING?
YES
SET APU SW TO OFF LOOSEN NUT ON OUTPUT LINE OF FUEL INLET FILTER PLACE CLOTH AROUND NUT SET APU SW TO RUN DOES CLOTH GET DAMP WITH FUEL RAPIDLY?
YES
NO
NO
SET APU SW TO OFF TIGHTEN NUT HOLD FLEXIBLE APU FUEL LINE TO APU CYCLE APU SW FROM OFF TO RUN TO OFF IS SURGE FELT ON FUEL LINE?
NO
OPEN LEFT AFT INTERTANK BAY ACCESS COVER HOLD BODY OF APU FUEL VALVE CYCLE APU SW FROM OFF TO RUN TO OFF DOES VALVE FEEL LIKE IT'S OPERATING?
NO
YES
YES
YES
REPLACE APU FUEL INLET FILTER
REPLACE APU FUEL BOOST PUMP
SET TESTER START/RUN STOP SW DOWN CHECK THAT ACCUMULATOR IS CHARGED WATCH TESTER SPEED INDICATOR AND START FUEL LT SET TESTER START RUN STOP SW UP DOES START FUEL LT COME ON WHEN SPEED INDICATOR READING PASSES 5%?
YES
SET TESTER SWITCHES DOWN AND DISCONNECT TESTER CHECK FOR GROUND ON PLUG 136P1 PIN 10 IS GROUND PRESENT?
YES
LOCATE OPEN IN WIRE W668-147-22 OR P2A20 BETWEEN PLUG 136P1 AND APU TB301-3 REPAIR OR REPLACE WIRE AS REQUIRED. 1
NO
NO
SET TESTER SWITCHES DOWN AND DISCONNECT TESTER REPLACE ESU
LOCATE OPEN IN APU GROUND WIRE P1H16N BETWEEN TB301-4 ON APU AND APU FRAME. REPAIR OR REPLACE WIRE AS REQUIRED.
1
REFER TO WIRING DIAGRAM 15-6.6 FOR FURTHER DETAILS.

GO TO NEXT PAGE

15-6.12 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ● ● ● OR ○ ○ ● ● THEN ● ○ ○ ● (FAILURE TO START) (CONTINUED)


YES
REPLACE SPARK PLUG. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
YES
SET APU SW TO OFF TIGHTEN NUT. LOOSEN NUT ON START FUEL NOZZLE. PLACE CLOTH OVER NUT. SET APU SW TO RUN. DOES CLOTH GET DAMP WITH FUEL?
YES
REPLACE START FUEL NOZZLE OR NOZZLE FILTER.
NO
DISCONNECT EXCITER PLUG. CHECK FOR CONTINUITY BETWEEN PLUG PIN B AND TERM 3 (CENTER) ON APU. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE P2B20 BETWEEN EXCITER PLUG AND TB301-3. REPAIR OR REPLACE WIRE AS REQUIRED. 1
NO
DISCONNECT PLUG 136P4 FROM APU FUEL VALVE. CHECK FOR GROUND ON PLUG 136P4 PIN B. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W654-13-22 OR W625-GD153C22N BETWEEN PLUG 136P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED. 1
TIGHTEN NUT. DISCONNECT PLUG 136P1 FROM ESU. CHECK FOR RESISTANCE BETWEEN PLUG 136P1 PINS 10 AND 17. IS RESISTANCE LESS THAN 500 OHMS?
NO
LOCATE OPEN IN ONE OF THE WIRES BETWEEN TB301 ON APU AND START FUEL VALVE COIL REPAIR OR REPLACE WIRE AS REQUIRED 1
YES
CHECK FOR CONTINUITY BETWEEN PLUG PIN A AND APU GROUND. IS CONTINUITY PRESENT?
NO
LOCATE OPEN IN WIRE P1B20N BETWEEN EXCITER PLUG AND TB301-5. REPAIR OR REPLACE WIRE AS REQUIRED. 1
YES
SET APU SW TO RUN CHECK FOR 28VDC BETWEEN PLUG 136P4 PIN A (+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE APU FUEL VALVE
NO
SET APU SW TO OFF LOOSEN NUT TO RESTRICTOR. PLACE CLOTH AROUND NUT SET APU SW TO RUN DOES CLOTH GET DAMP WITH FUEL?
YES
REPLACE RESTRICTOR
NO
REPLACE EXCITER CABLE. CONNECT EXCITER PLUG REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
NO
REPLACE EXCITER
YES
CHECK FOR 28VDC BETWEEN TERM A 3 (+) OF APU FAULT RELAY AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W654-12-22 OR W625-85-22 BETWEEN PLUG 136P4 AND APU FAULT RELAY. REPAIR OR REPLACE WIRE AS REQUIRED. 1
NO
REPLACE APU FAULT RELAY.
NO
REPLACE FUEL PUMP.
YES
SET APU SW TO OFF TIGHTEN NUT. LOOSEN NUT ON START FUEL NOZZLE. PLACE CLOTH OVER NUT. SET APU SW TO RUN. DOES CLOTH GET DAMP WITH FUEL?
YES
REPLACE START FUEL NOZZLE OR NOZZLE FILTER.
NO
REPLACE START FUEL VALVE. CONNECT EXCITER PLUG AND ESU PLUG. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
FAULT CORRECTED.

1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

GO TO NEXT PAGE

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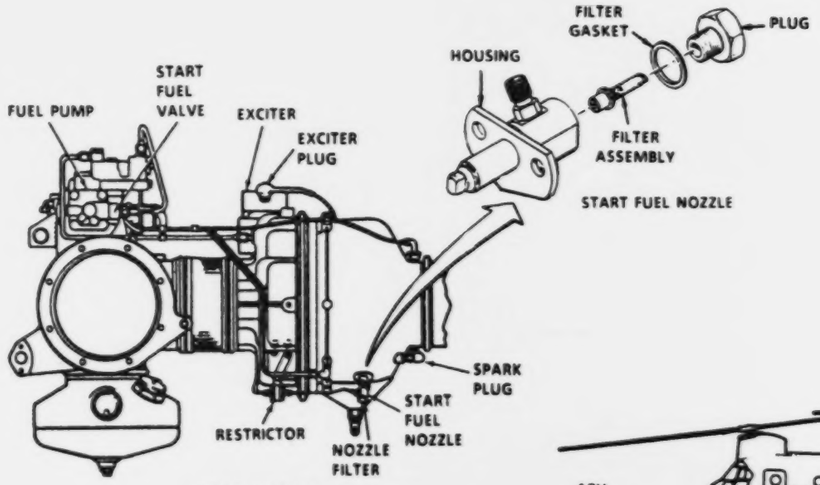
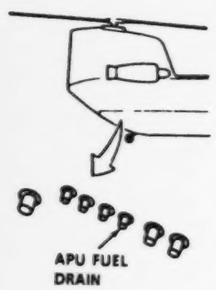
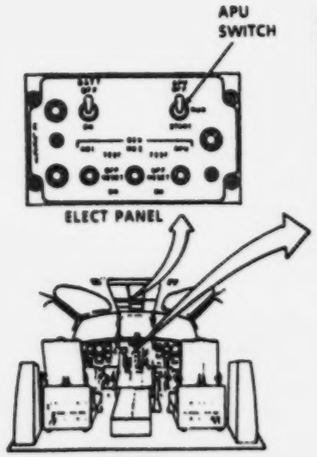
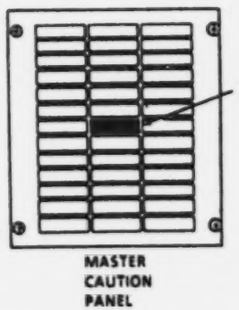
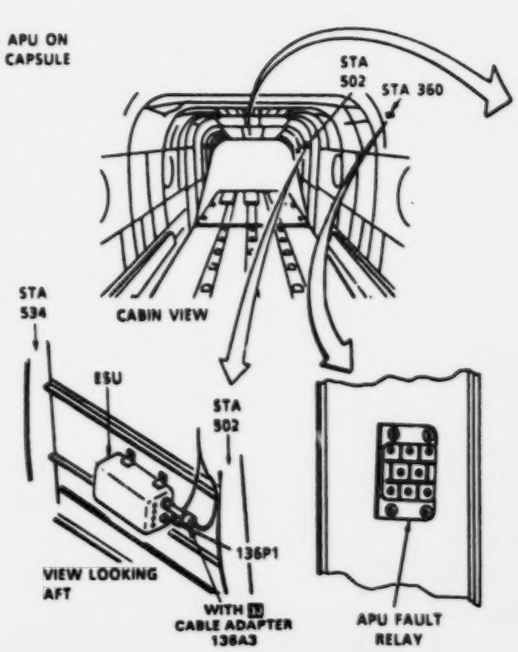
15-6.12 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ● ● ● OR ○ ○ ● ● THEN ● ○ ○ ● (FAILURE TO START) (CONTINUED)

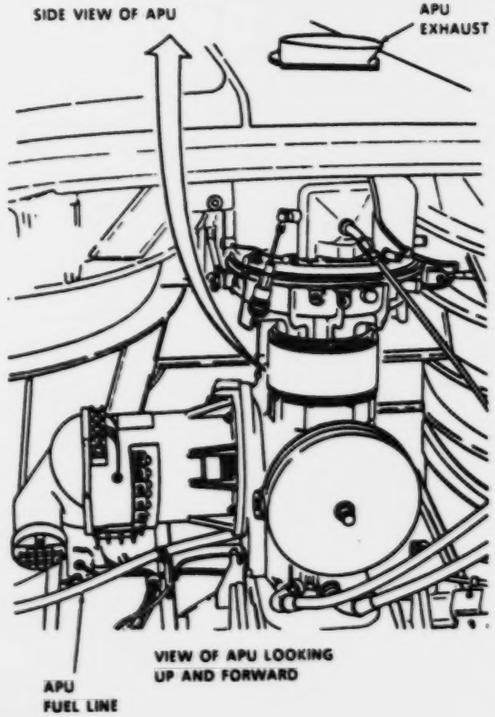


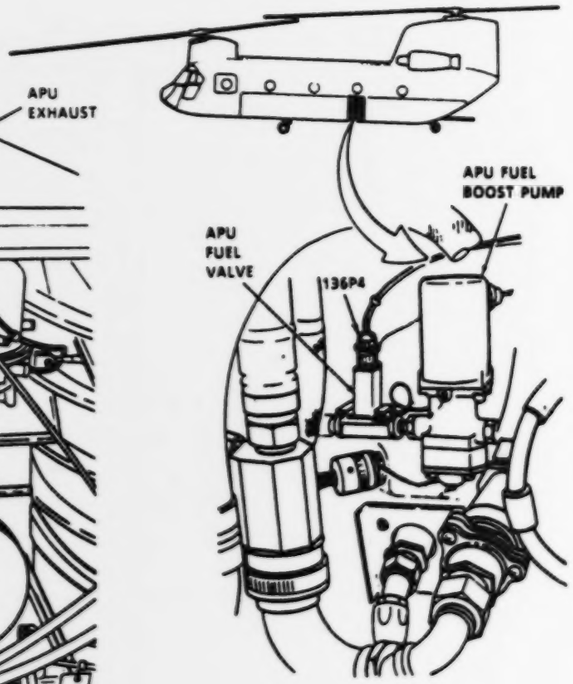












END OF TASK

15-6.13 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ○ ● THEN ● ○ ○ ● (FAILURE TO START)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

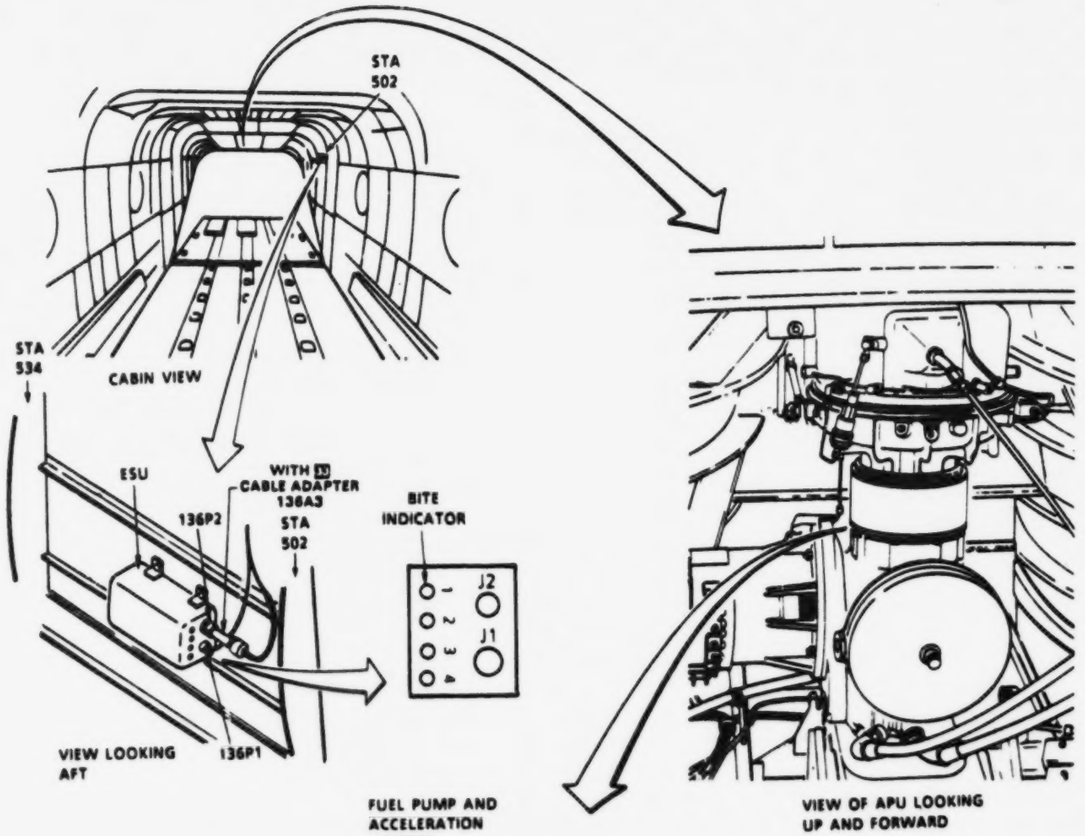
Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter
APU Tester 161226-200

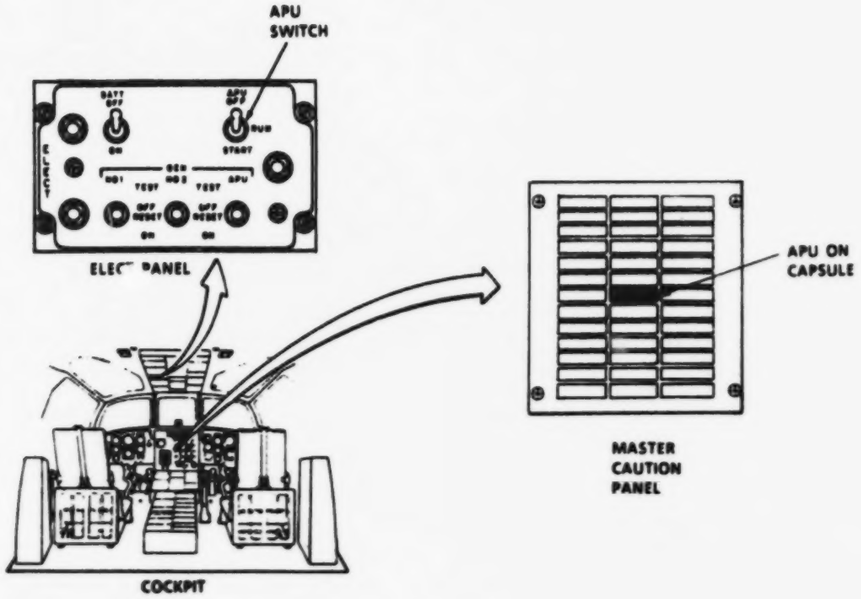
Materials:
None

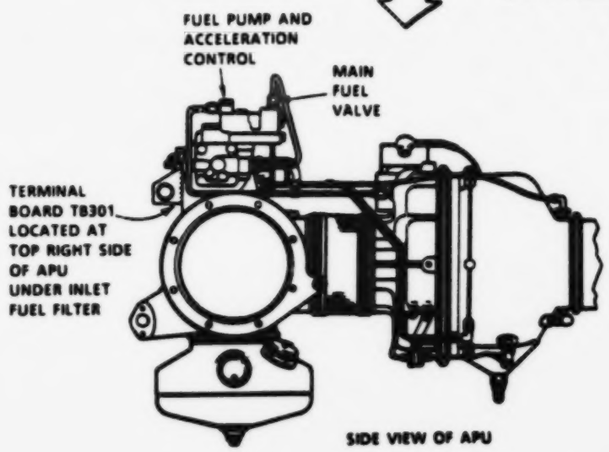
Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

References:
TM 55-1520-240-23
TM 55-2835-203-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On






FUEL PUMP AND ACCELERATION CONTROL
MAIN FUEL VALVE
TERMINAL BOARD TB301 LOCATED AT TOP RIGHT SIDE OF APU UNDER INLET FUEL FILTER
SIDE VIEW OF APU

GO TO NEXT PAGE

15-6.13 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ○ ● THEN ● ○ ○ ● (FAILURE TO START) (CONTINUED)

SET **APU** SW TO **OFF**. CONNECT APU TESTER BETWEEN ESU AND AIRFRAME WIRING. SET ALL TESTER SWITCHES DOWN. SET **APU** SW TO RUN. SET APU TESTER **MASTER** AND **LOCAL/REMOTE** SWITCHES UP. WATCH TESTER **MAIN FUEL** AND **OIL PRESSURE** LIGHTS. SET TESTER **START RUN STOP** SW UP. DID **MAIN FUEL** LIGHTS COME ON?

YES → DID **OIL PRESSURE** LIGHT COME ON?

YES → CABLE FROM AIRFRAME

NO → SET TESTER SWITCHES DOWN AND DISCONNECT TESTER. REMOVE ELEC PWR DISCONNECT PLUG 136P1 FROM ESU. CHECK FOR CONTINUITY BETWEEN PLUG 136P1 PINS 7, 8 AND 16. IS CONTINUITY PRESENT?

YES → REPLACE ESU.

NO → IS CONTINUITY PRESENT BETWEEN PINS 7 AND 8?

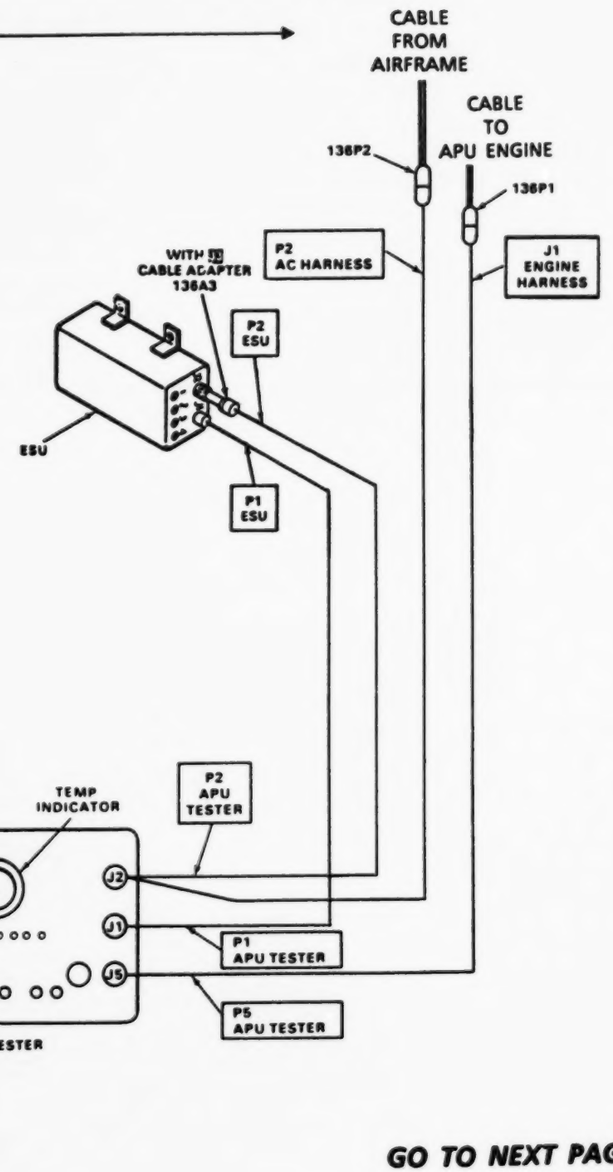
YES → LOCATE OPEN IN WIRE W668-150-22 OR P3A20 BETWEEN PLUG 136P1 AND TB301 ON APU. REPAIR OR REPLACE WIRE AS REQUIRED. ⚠1

NO → IS CONTINUITY PRESENT BETWEEN PINS 8 AND 16?

YES → LOCATE OPEN IN WIRE W668-140-22 OR P3B20 BETWEEN PLUG 136P1 AND TB301 ON APU. REPAIR OR REPLACE WIRE AS REQUIRED. ⚠1

NO → LOCATE OPEN IN WIRE W668-141-22 OR P3C20 BETWEEN PLUG 136P1 AND TB301 ON APU. REPAIR OR REPLACE WIRE AS REQUIRED. ⚠1

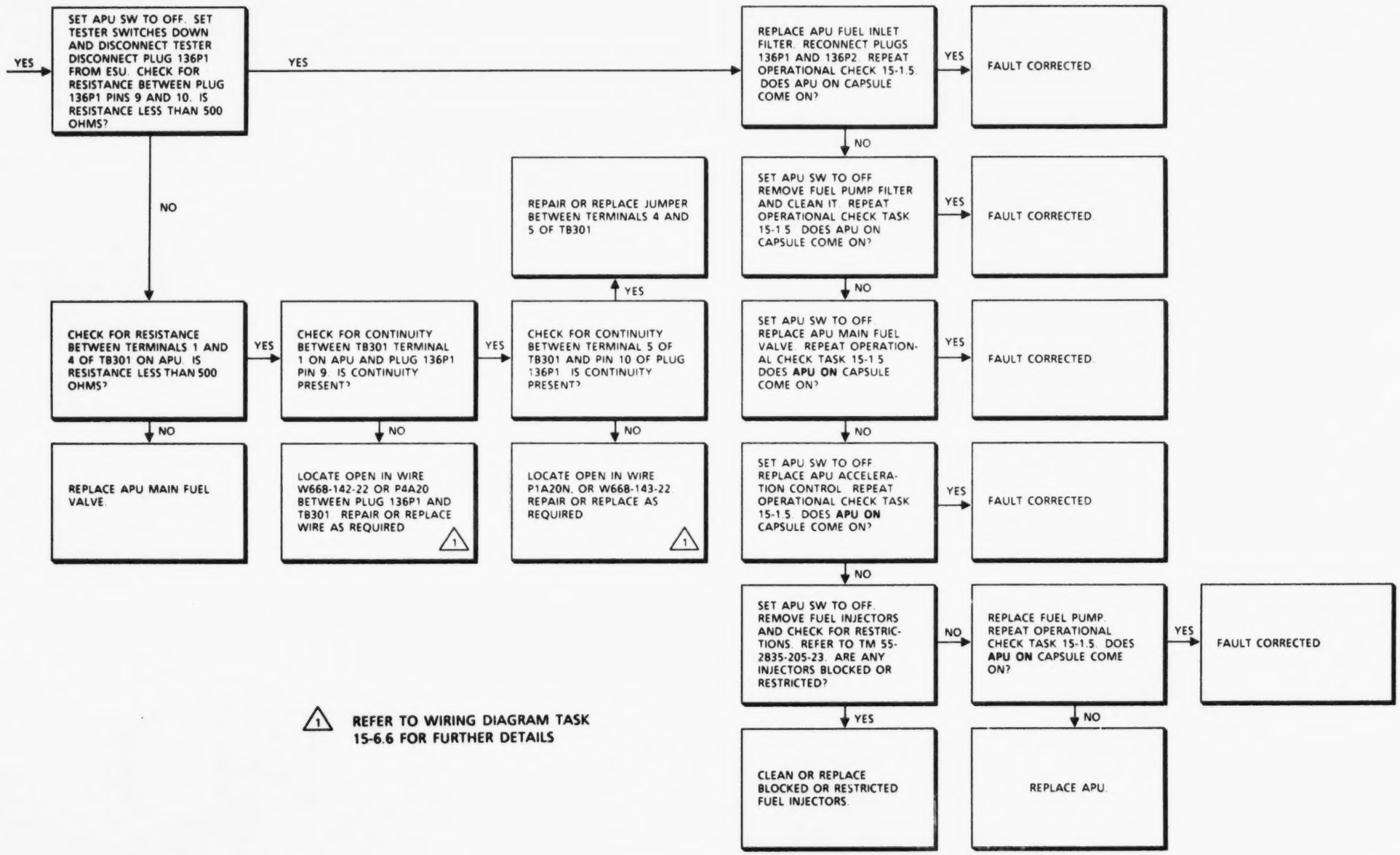
NO → SET TESTER SWITCHES DOWN AND DISCONNECT TESTER. REPLACE ESU.



⚠1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

GO TO NEXT PAGE

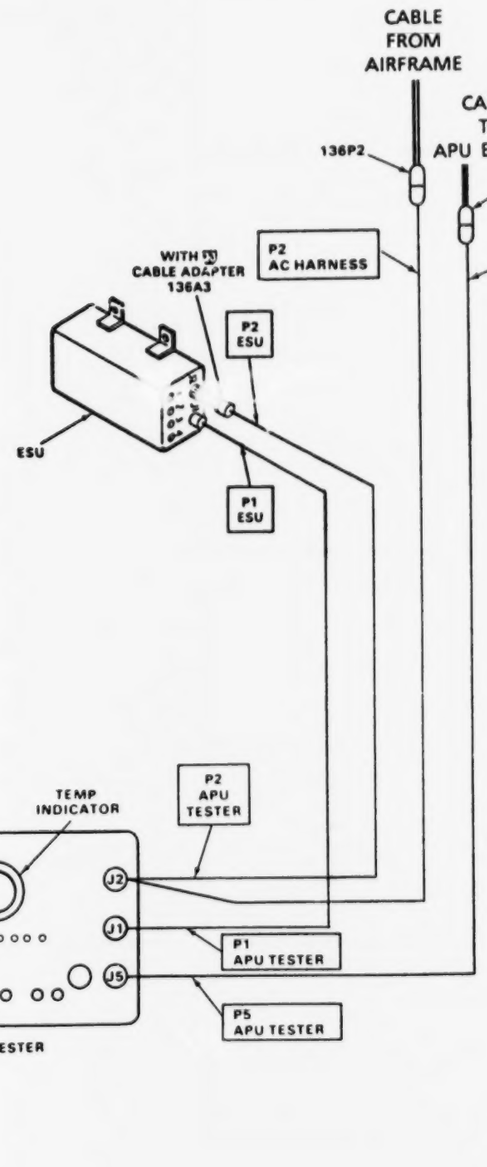
15-6.13 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ○ ● THEN ● ○ ○ ● (FAILURE TO START) (CONTINUED)

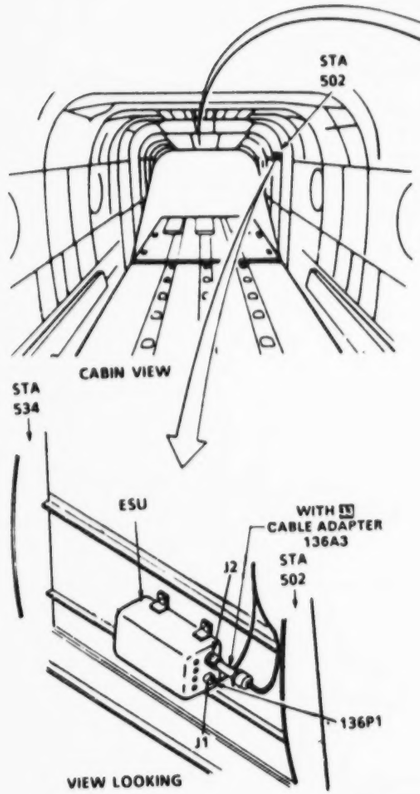

SET APU SW TO OFF. SET TESTER SWITCHES DOWN AND DISCONNECT TESTER DISCONNECT PLUG 136P1 FROM ESU. CHECK FOR RESISTANCE BETWEEN PLUG 136P1 PINS 9 AND 10. IS RESISTANCE LESS THAN 500 OHMS?
YES
YES
NO
REPLACE APU FUEL INLET FILTER. RECONNECT PLUGS 136P1 AND 136P2. REPEAT OPERATIONAL CHECK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
SET APU SW TO OFF REMOVE FUEL PUMP FILTER AND CLEAN IT. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
SET APU SW TO OFF REPLACE APU MAIN FUEL VALVE. REPEAT OPERATIONAL CHECK TASK 15-1.5 DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
SET APU SW TO OFF REPLACE APU ACCELERATION CONTROL. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
NO
SET APU SW TO OFF. REMOVE FUEL INJECTORS AND CHECK FOR RESTRICTIONS. REFER TO TM 55-2835-205-23. ARE ANY INJECTORS BLOCKED OR RESTRICTED?
NO
REPLACE FUEL PUMP. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE COME ON?
YES
FAULT CORRECTED
YES
CLEAN OR REPLACE BLOCKED OR RESTRICTED FUEL INJECTORS.
NO
REPLACE APU.
CHECK FOR RESISTANCE BETWEEN TERMINALS 1 AND 4 OF TB301 ON APU. IS RESISTANCE LESS THAN 500 OHMS?
YES
NO
REPLACE APU MAIN FUEL VALVE.
CHECK FOR CONTINUITY BETWEEN TB301 TERMINAL 1 ON APU AND PLUG 136P1 PIN 9. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W668-142-22 OR P4A20 BETWEEN PLUG 136P1 AND TB301. REPAIR OR REPLACE WIRE AS REQUIRED
1
CHECK FOR CONTINUITY BETWEEN TERMINAL 5 OF TB301 AND PIN 10 OF PLUG 136P1. IS CONTINUITY PRESENT?
YES
NO
REPAIR OR REPLACE JUMPER BETWEEN TERMINALS 4 AND 5 OF TB301
LOCATE OPEN IN WIRE P1A20N, OR W668-143-22 REPAIR OR REPLACE AS REQUIRED
1

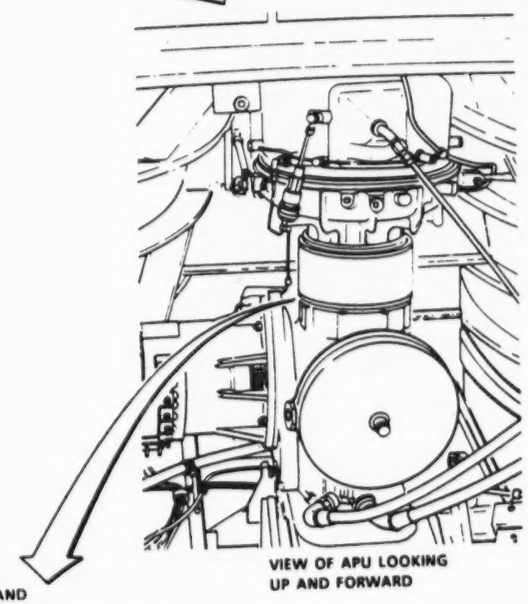
1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS

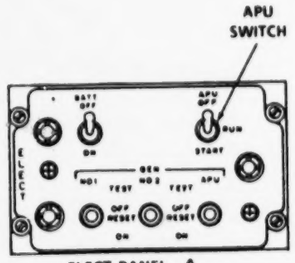
GO TO NEXT PAGE

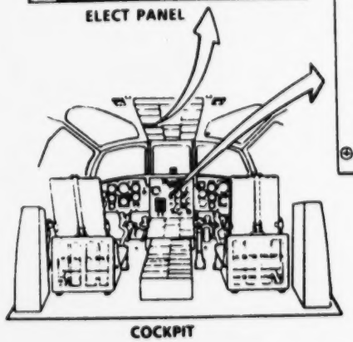
15-6.13 APU MOTORS BUT DOES NOT START, ESU BITE INDICATES ○ ○ ○ ● THEN ● ○ ○ ● (FAILURE TO START) (CONTINUED)

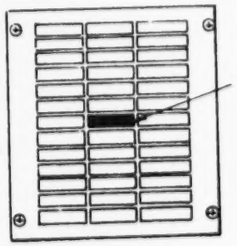


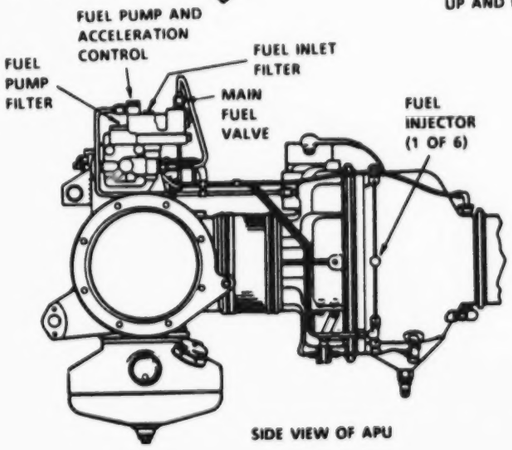












END OF TASK

15-6.14 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ● ● ○ ● (OVERSPEED)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

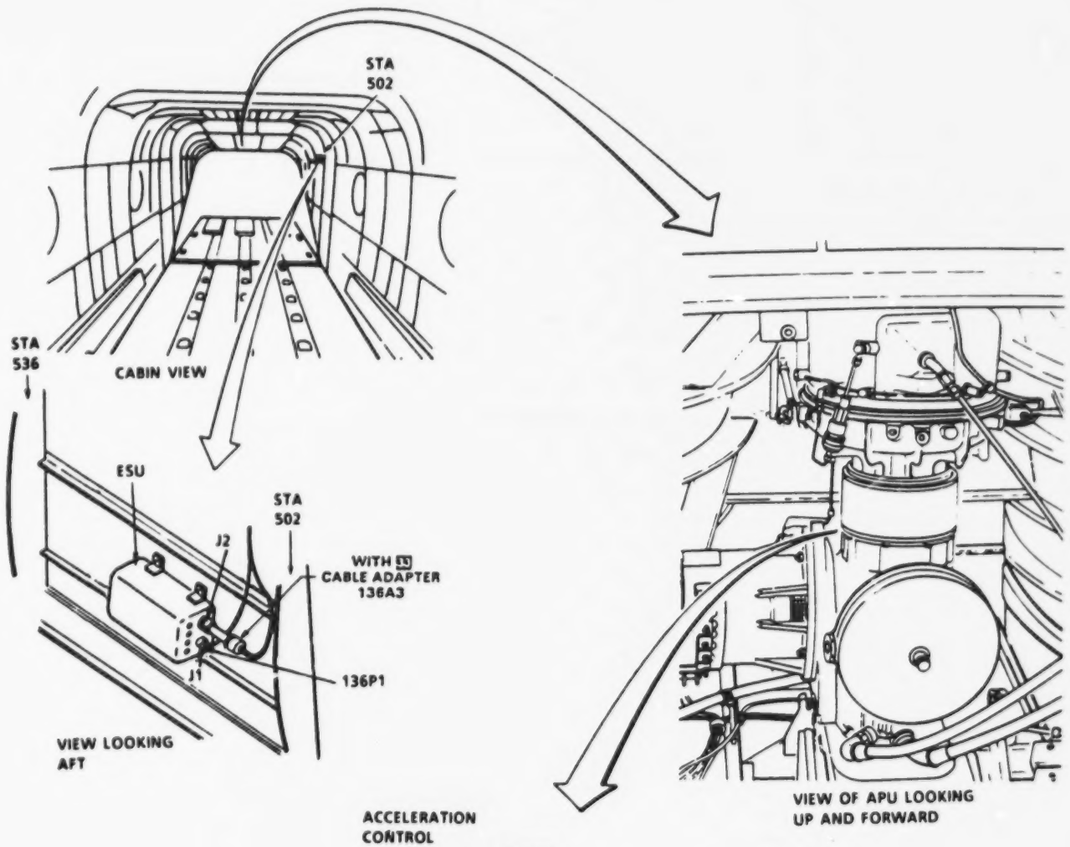
Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
APU Tester 161226-200

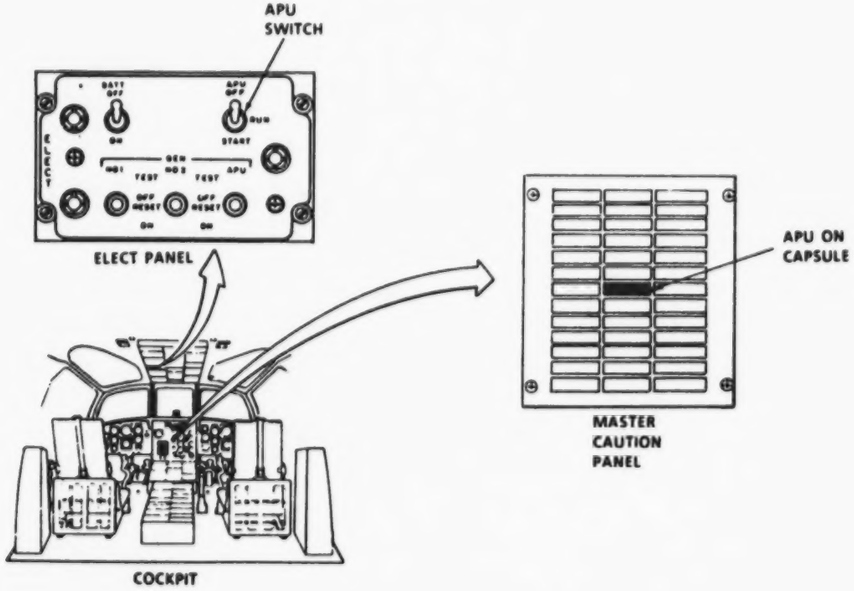
Materials:
None

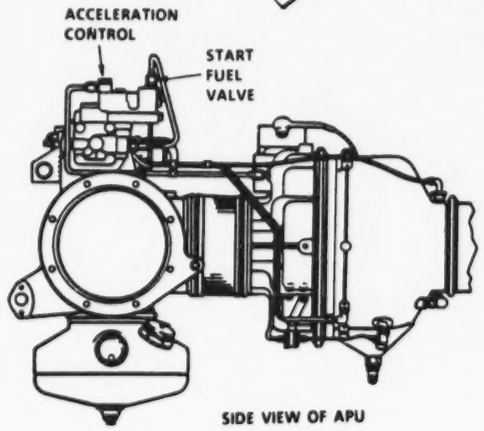
Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

References:
TM 55-1520-240-23
TM 55-2835-203-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
APU Tester Connected between ESU and Airframe Wiring. All Tester Switches Set Down.







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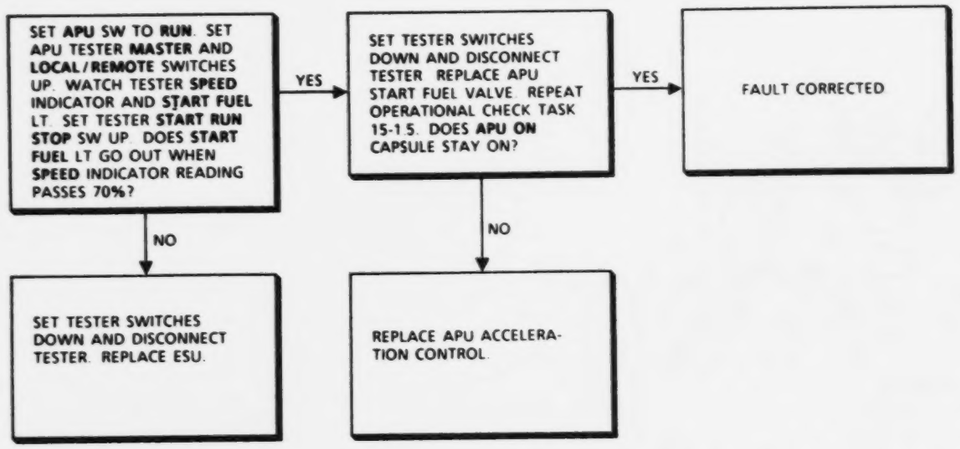
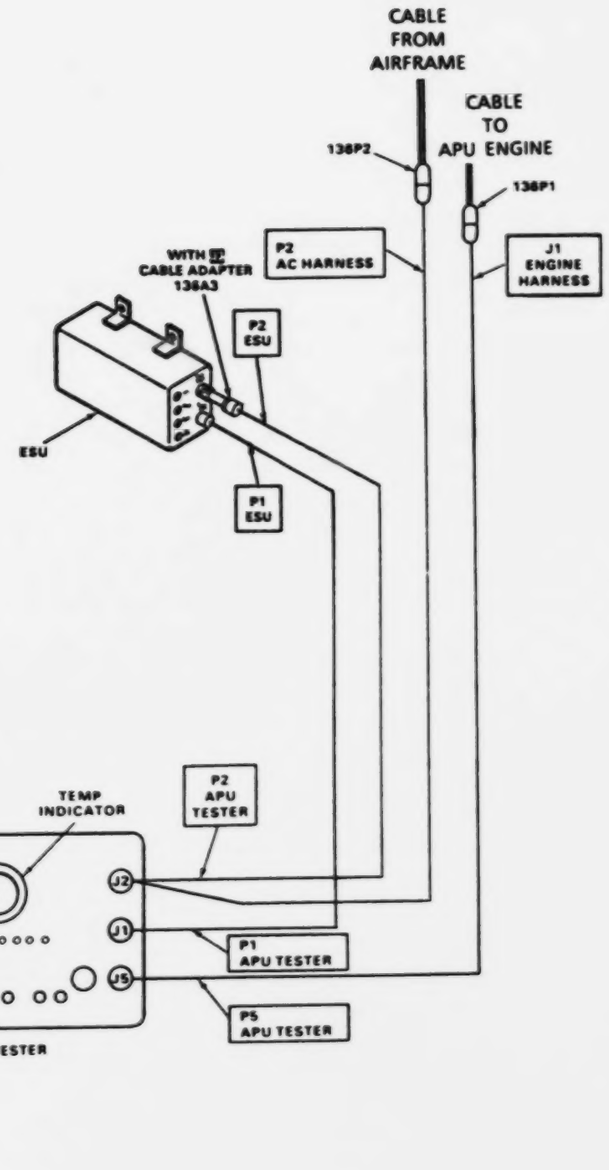
15-6.14 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ● ● ○ ● (OVERSPEED) (CONTINUED)


SET APU SW TO RUN. SET APU TESTER MASTER AND LOCAL/REMOTE SWITCHES UP. WATCH TESTER SPEED INDICATOR AND START FUEL LT. SET TESTER START RUN STOP SW UP. DOES START FUEL LT GO OUT WHEN SPEED INDICATOR READING PASSES 70%?
YES
SET TESTER SWITCHES DOWN AND DISCONNECT TESTER. REPLACE APU START FUEL VALVE. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE STAY ON?
YES
FAULT CORRECTED
NO
SET TESTER SWITCHES DOWN AND DISCONNECT TESTER. REPLACE ESU.
NO
REPLACE APU ACCELERATION CONTROL.



END OF TASK

15-6.15 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○ ● ○ ● (UNDERSPEED)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692

Materials:
Cloth (E120)
Tape (E385)

Personnel Required:
Medium Helicopter Repairer (2)

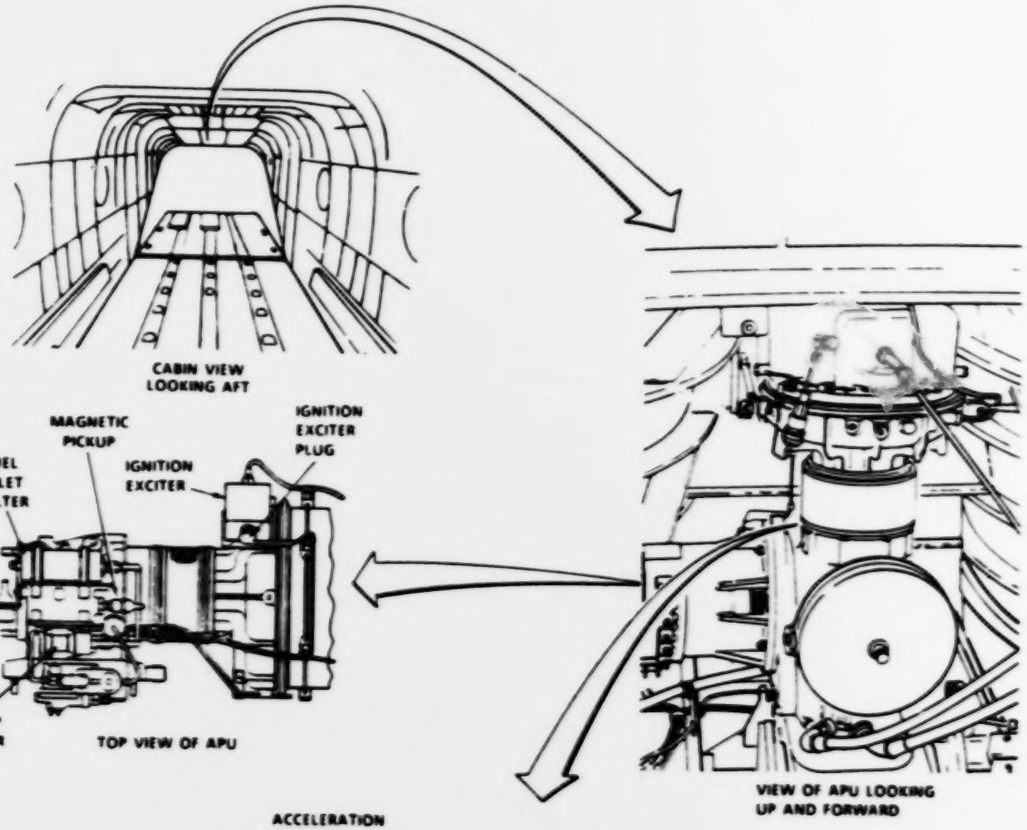
References:
TM 55-1520-240-23
TM 55-2835-203-23

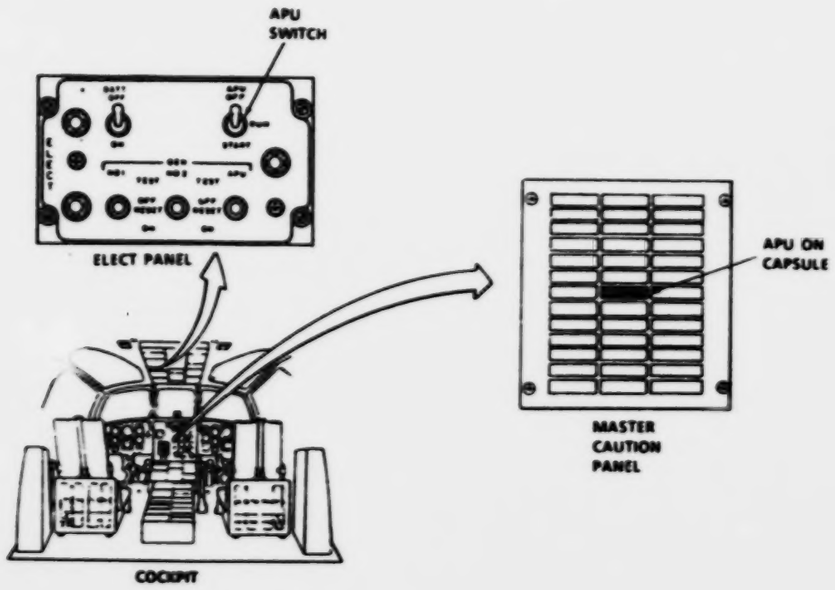
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On

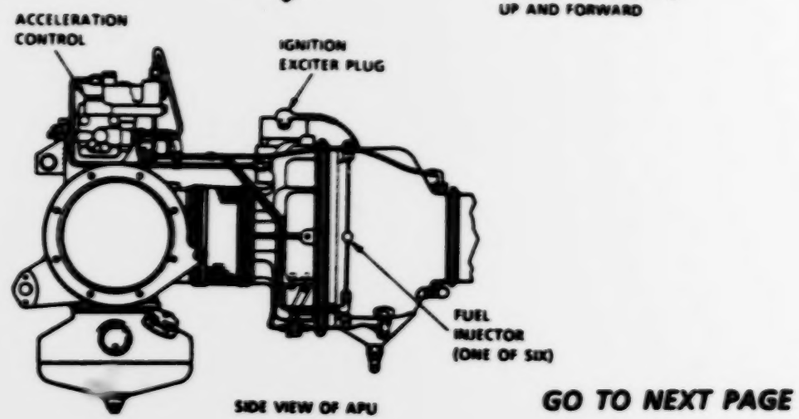
General Safety Instructions:

WARNING

All regulations and instructions for handling fuels shall be strictly observed.







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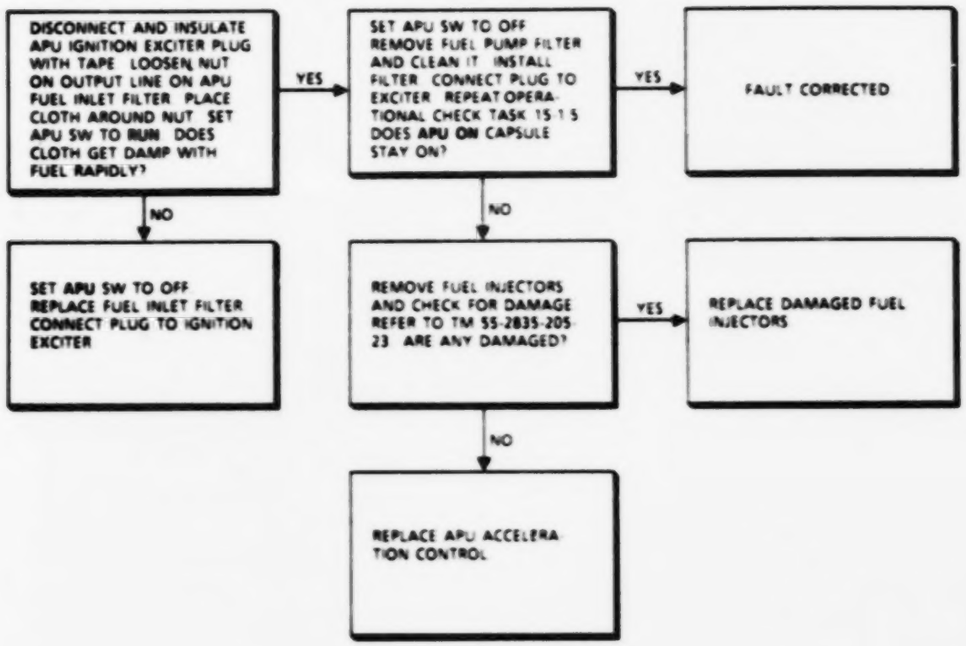
15-6.15 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○ ● ○ ● (UNDERSPEED) (CONTINUED)


DISCONNECT AND INSULATE APU IGNITION EXCITER PLUG WITH TAPE LOOSEN NUT ON OUTPUT LINE ON APU FUEL INLET FILTER PLACE CLOTH AROUND NUT SET APU SW TO RUN DOES CLOTH GET DAMP WITH FUEL RAPIDLY?
YES
SET APU SW TO OFF REMOVE FUEL PUMP FILTER AND CLEAN IT INSTALL FILTER CONNECT PLUG TO EXCITER REPEAT OPERATIONAL CHECK TASK 15-1 5 DOES APU ON CAPSULE STAY ON?
YES
FAULT CORRECTED
NO
SET APU SW TO OFF REPLACE FUEL INLET FILTER CONNECT PLUG TO IGNITION EXCITER
NO
REMOVE FUEL INJECTORS AND CHECK FOR DAMAGE REFER TO TM 55-2835-205-23 ARE ANY DAMAGED?
YES
REPLACE DAMAGED FUEL INJECTORS
NO
REPLACE APU ACCELERATION CONTROL

END OF TASK

15-6.16 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○ ○ ● ● (OVERTEMPERATURE)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

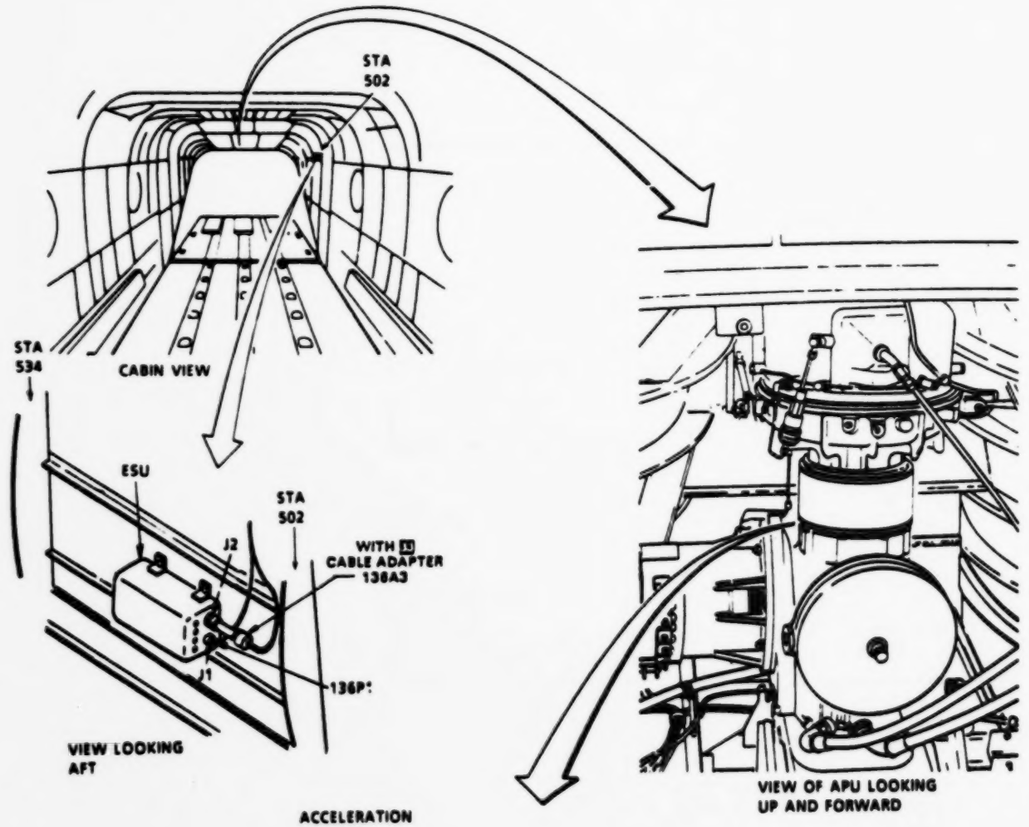
Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
APU Tester 161226-200

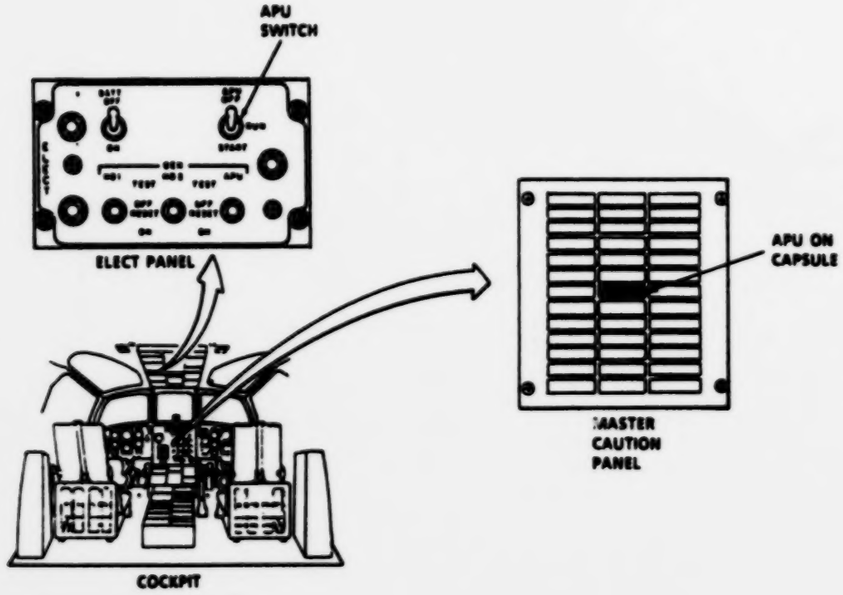
Materials:
None

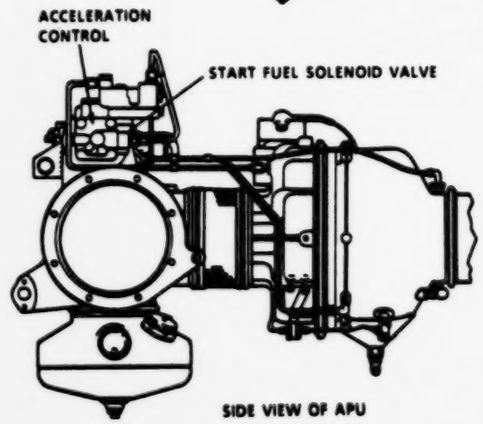
Personnel Required:
Aircraft Electrician
Medium Helicopter Repairer

References:
TM 55-1520-240-23
TM 55-2835-203-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
APU Tester Connected between ESU and Airframe Wiring. All Tester Switches Set Down







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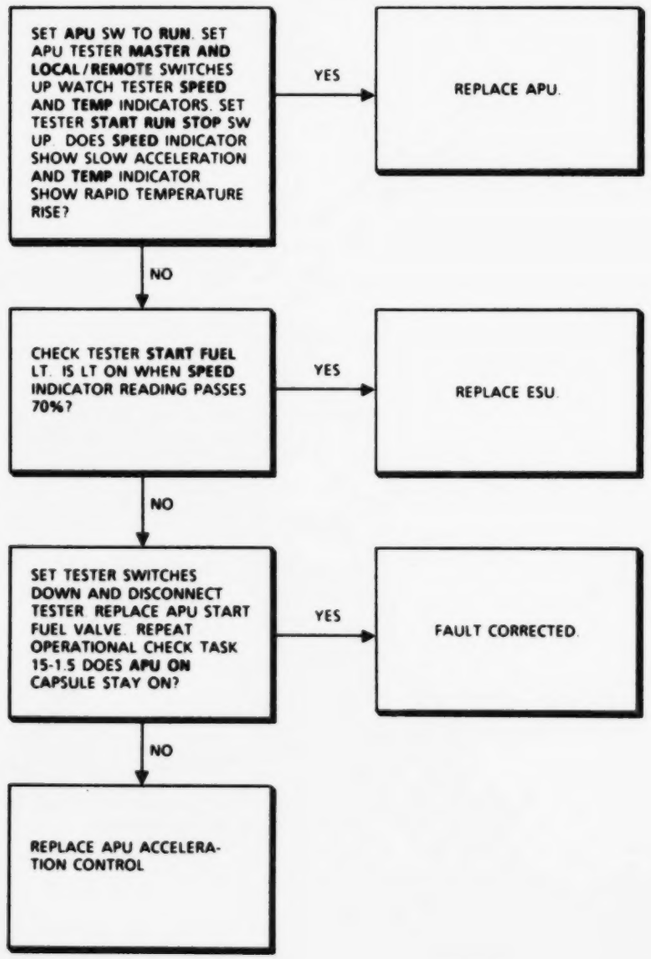
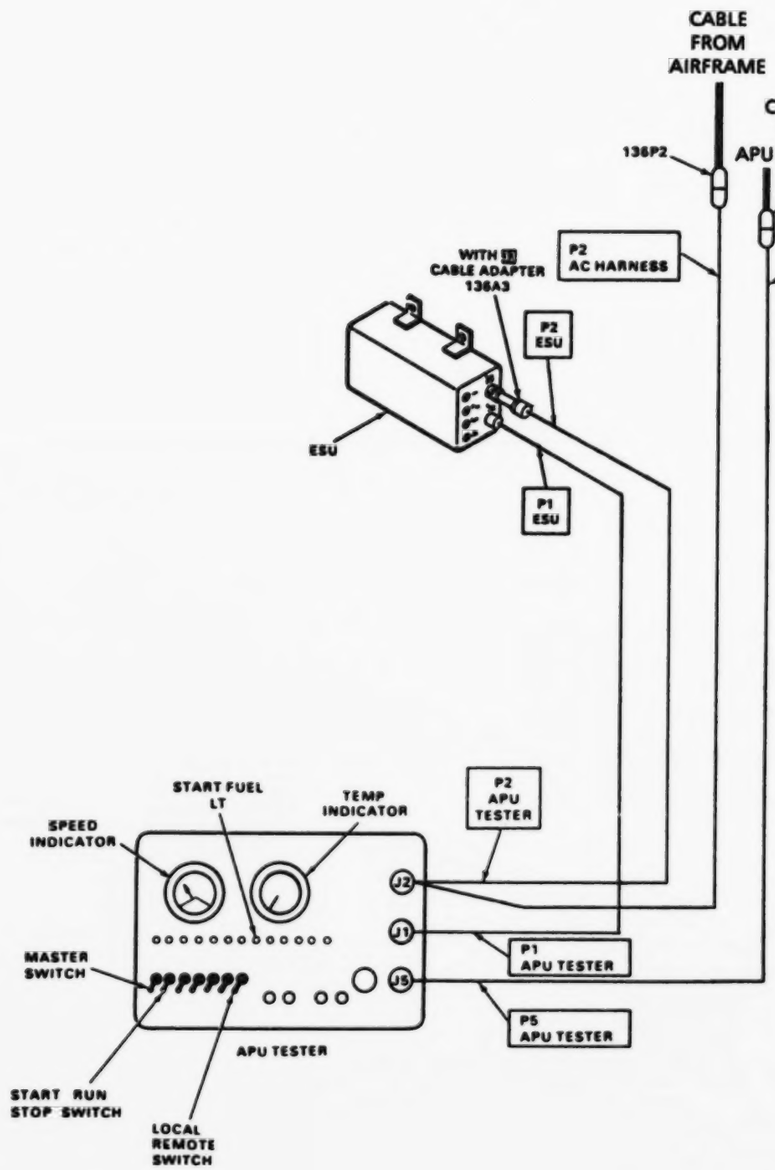
15-6.16 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ○○●● (OVERTEMPERATURE) (CONTINUED)


SET APU SW TO RUN. SET APU TESTER MASTER AND LOCAL/REMOTE SWITCHES UP WATCH TESTER SPEED AND TEMP INDICATORS. SET TESTER START RUN STOP SW UP. DOES SPEED INDICATOR SHOW SLOW ACCELERATION AND TEMP INDICATOR SHOW RAPID TEMPERATURE RISE?
YES
REPLACE APU.
NO
CHECK TESTER START FUEL LT. IS LT ON WHEN SPEED INDICATOR READING PASSES 70%?
YES
REPLACE ESU.
NO
SET TESTER SWITCHES DOWN AND DISCONNECT TESTER. REPLACE APU START FUEL VALVE. REPEAT OPERATIONAL CHECK TASK 15-1.5. DOES APU ON CAPSULE STAY ON?
YES
FAULT CORRECTED.
NO
REPLACE APU ACCELERATION CONTROL



END OF TASK

15-6.17 APU STARTS AND RUNS THEN SHUTS DOWN, ESU BITE INDICATES ○○●● (OVERTEMPERATURE) (HOT START)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit.
NSN 5180-00-323-4692
APU Tester 161226-200
Source Low Pressure Compressed Air
Goggles

Materials:
None

Personnel Required:
Medium Helicopter Repairer

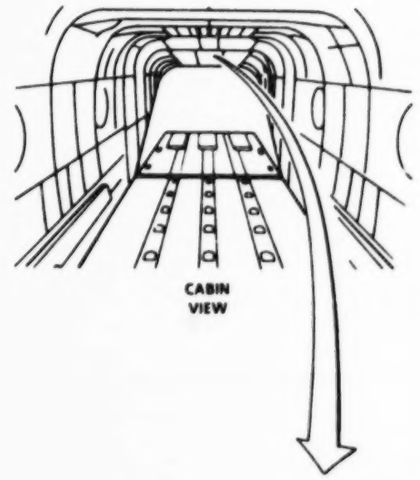
References:
TM 55-1520-240-23

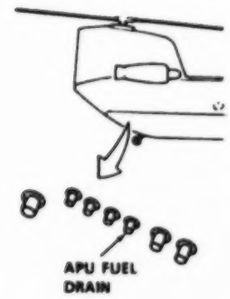
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

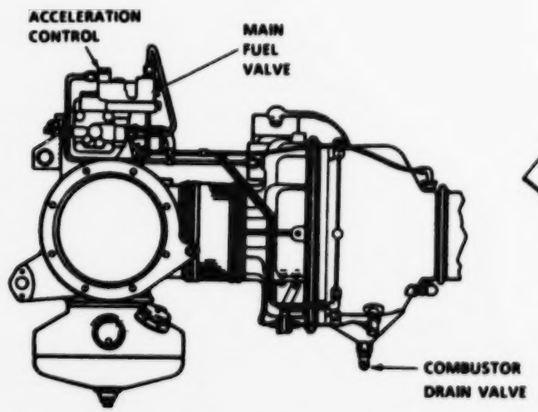
General Safety Instructions:

WARNING

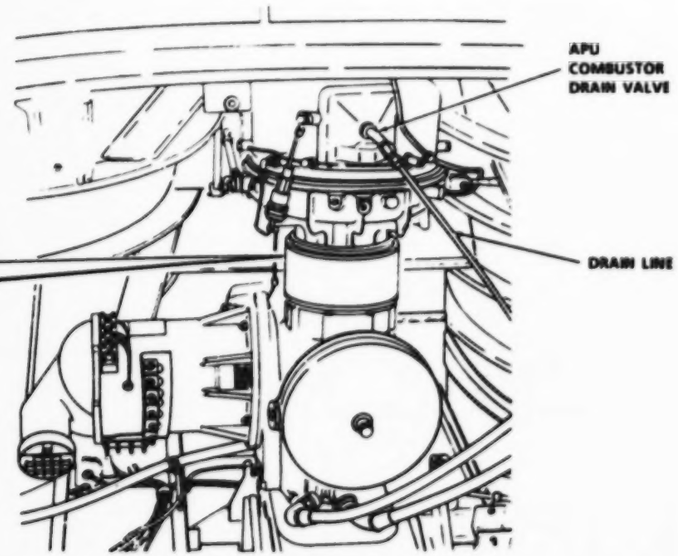
Do not use more than 30 psi compressed air for cleaning purposes. Debris trajected under pressure can cause injury to eyes. Use source of compressed air under 30 psi and eye protection to prevent injury to personnel.







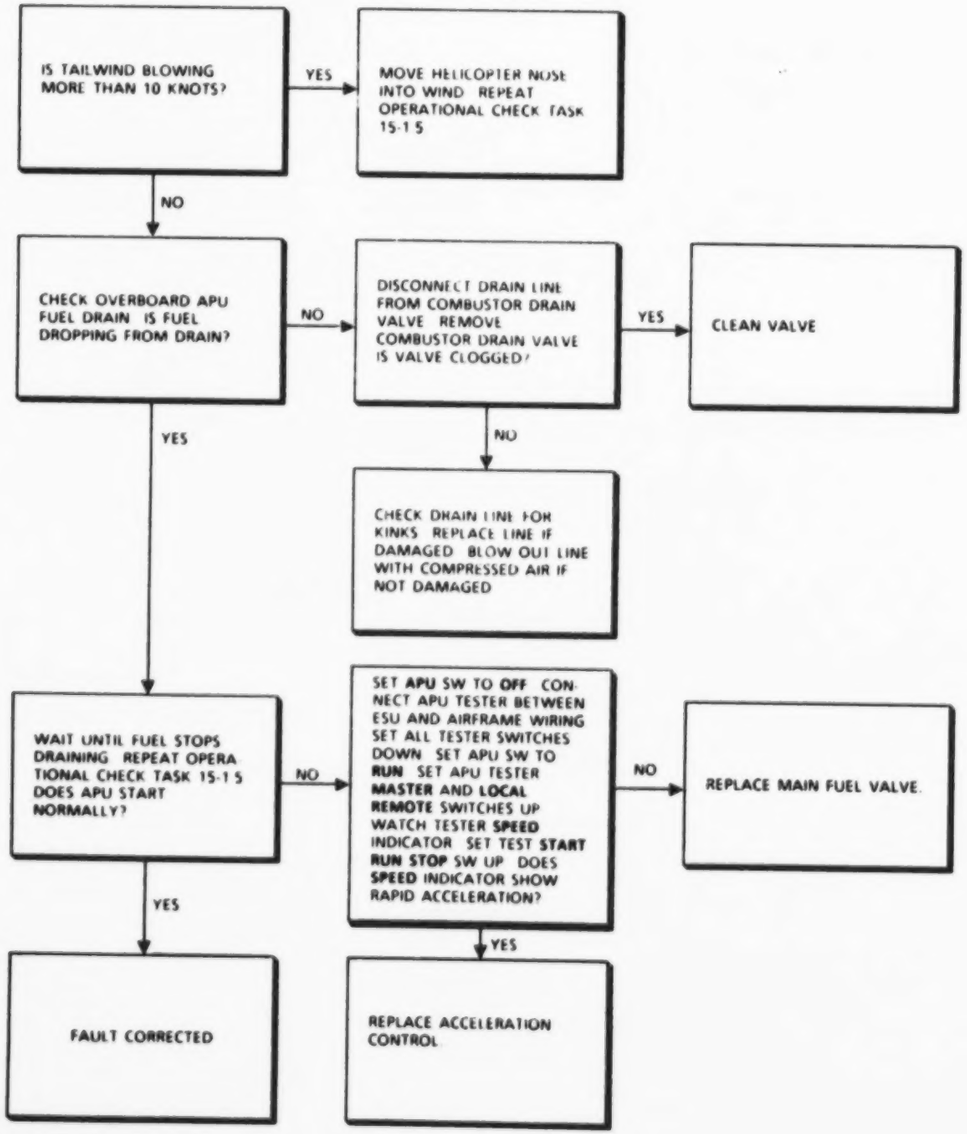
SIDE VIEW OF APU

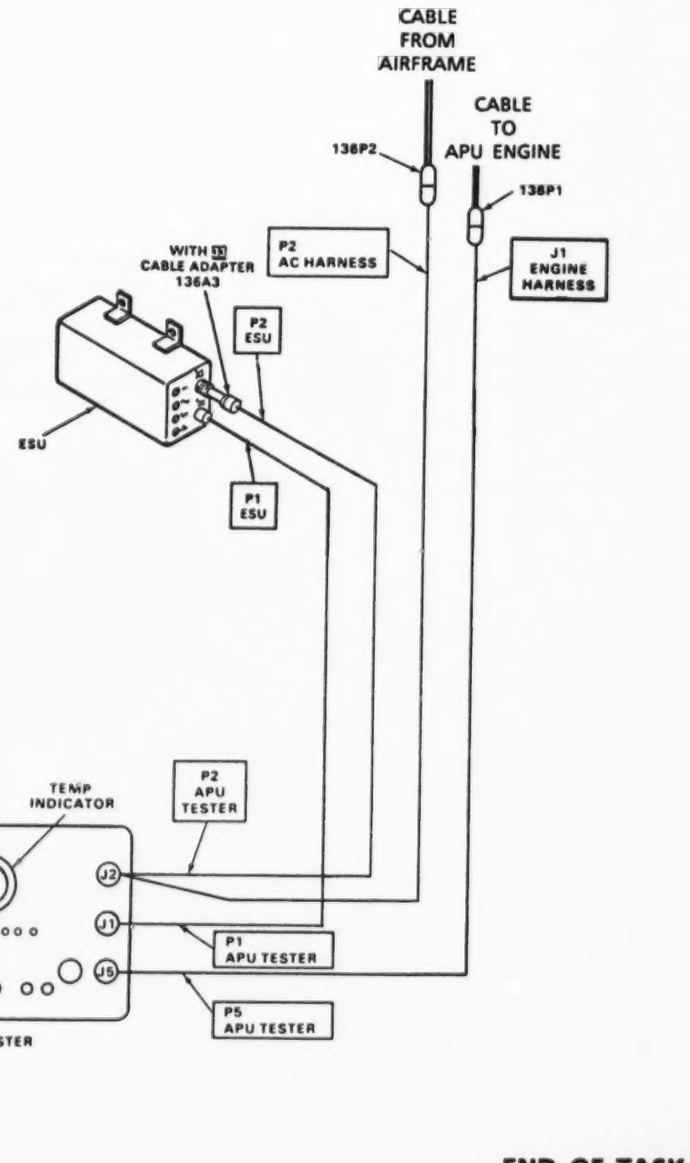


VIEW OF APU LOOKING
UP AND FORWARD

GO TO NEXT PAGE

15-6.17 APU STARTS AND RUNS THEN SHUTS DOWN, ESU BITE INDICATES ○○●● (OVERTEMPERATURE) (HOT START) (CONTINUED)


IS TAILWIND BLOWING MORE THAN 10 KNOTS?
YES
MOVE HELICOPTER NOSE INTO WIND REPEAT OPERATIONAL CHECK TASK 15-1 5
NO
CHECK OVERBOARD APU FUEL DRAIN IS FUEL DROPPING FROM DRAIN?
NO
DISCONNECT DRAIN LINE FROM COMBUSTOR DRAIN VALVE REMOVE COMBUSTOR DRAIN VALVE IS VALVE CLOGGED?
YES
CLEAN VALVE
YES
NO
CHECK DRAIN LINE FOR KINKS REPLACE LINE IF DAMAGED BLOW OUT LINE WITH COMPRESSED AIR IF NOT DAMAGED
WAIT UNTIL FUEL STOPS DRAINING REPEAT OPERA TIONAL CHECK TASK 15-1 5 DOES APU START NORMALLY?
NO
SET APU SW TO OFF CON- NECT APU TESTER BETWEEN ESU AND AIRFRAME WIRING SET ALL TESTER SWITCHES DOWN SET APU SW TO RUN SET APU TESTER MASTER AND LOCAL REMOTE SWITCHES UP WATCH TESTER SPEED INDICATOR SET TEST START RUN STOP SW UP DOES SPEED INDICATOR SHOW RAPID ACCELERATION?
NO
REPLACE MAIN FUEL VALVE.
YES
FAULT CORRECTED
YES
REPLACE ACCELERATION CONTROL



END OF TASK

15-6.18 APU STARTS BUT SHUTS DOWN, ESU BITE INDICATES ●●○○ (OPEN THERMOCOUPLE)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Conf:gurations:
All

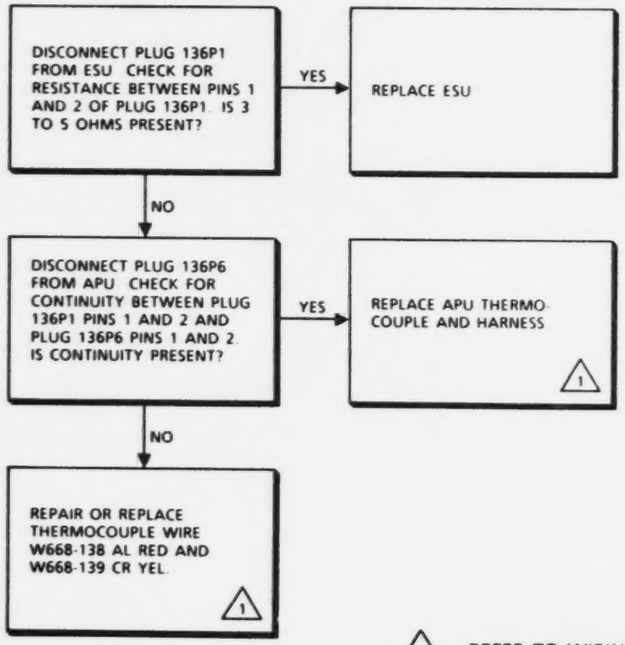
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

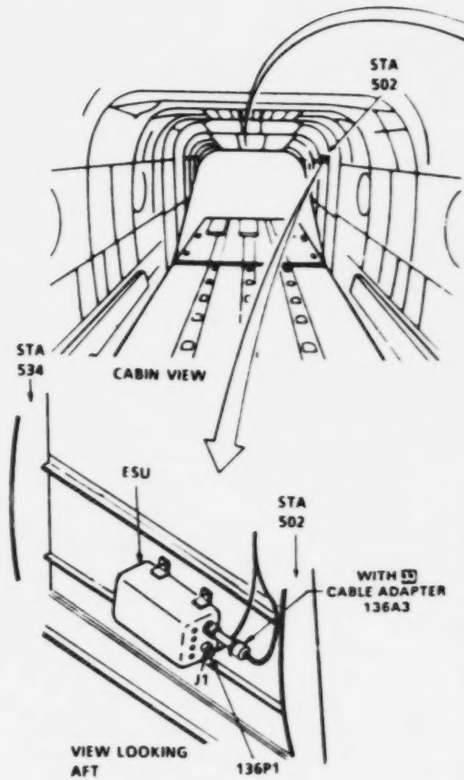
Personnel Required:
Aircraft Electrician

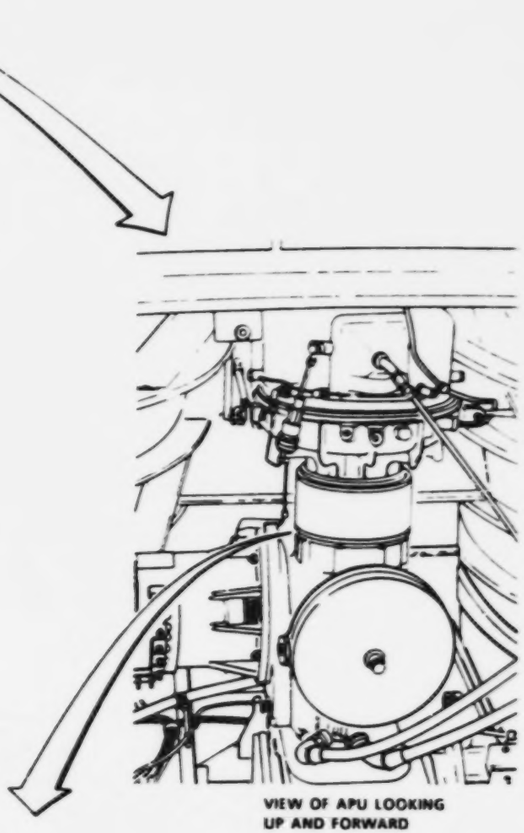
References:
TM 55-1520-240-23

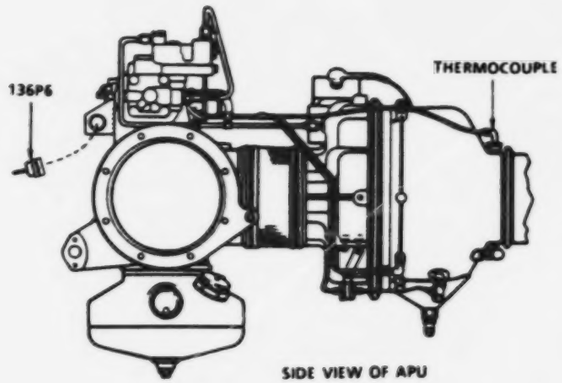
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


DISCONNECT PLUG 136P1 FROM ESU. CHECK FOR RESISTANCE BETWEEN PINS 1 AND 2 OF PLUG 136P1. IS 3 TO 5 OHMS PRESENT?
YES
REPLACE ESU
NO
DISCONNECT PLUG 136P6 FROM APU. CHECK FOR CONTINUITY BETWEEN PLUG 136P1 PINS 1 AND 2 AND PLUG 136P6 PINS 1 AND 2. IS CONTINUITY PRESENT?
YES
REPLACE APU THERMOCOUPLE AND HARNESS
1
NO
REPAIR OR REPLACE THERMOCOUPLE WIRE W668-138 AL RED AND W668-139 CR YEL.
1

1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS







END OF TASK

15-6.19 APU STARTS AND RUNS BUT ESU BITE INDICATES ● ○ ● ○ (SHORTED THERMO. PROBE) (WARNING)

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

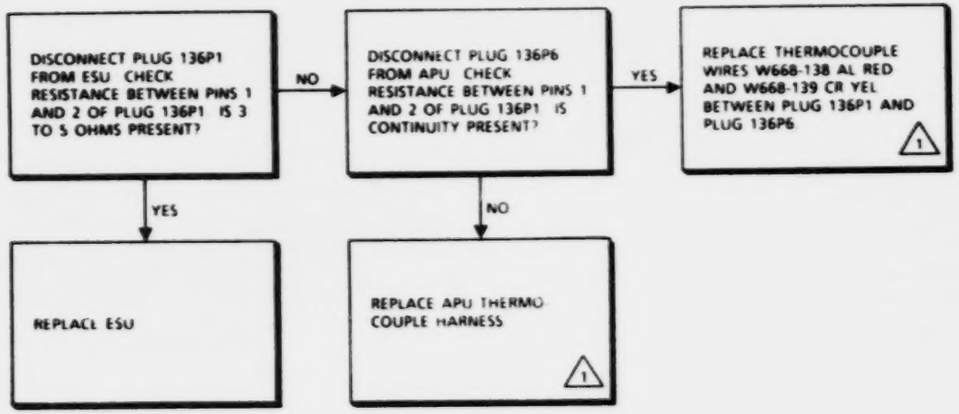
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

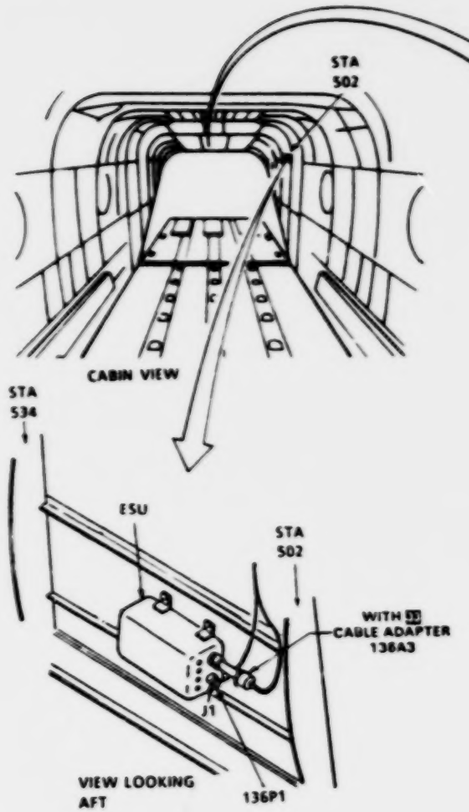
Personnel Required:
Aircraft Electrician

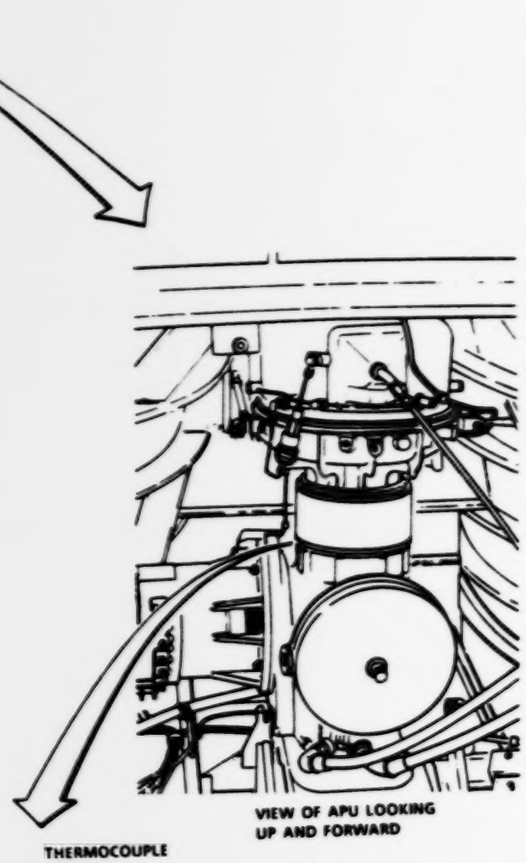
References:
TM 55-1520-240-23

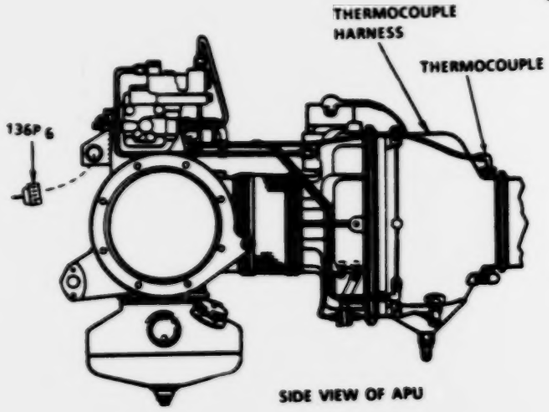
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off


DISCONNECT PLUG 136P1 FROM ESU CHECK RESISTANCE BETWEEN PINS 1 AND 2 OF PLUG 136P1 IS 3 TO 5 OHMS PRESENT?
NO
DISCONNECT PLUG 136P6 FROM APU CHECK RESISTANCE BETWEEN PINS 1 AND 2 OF PLUG 136P1 IS CONTINUITY PRESENT?
YES
REPLACE THERMOCOUPLE WIRES W668-138 AL RED AND W668-139 CR YEL BETWEEN PLUG 136P1 AND PLUG 136P6
1
YES
REPLACE ESU
NO
REPLACE APU THERMO COUPLE HARNESS
1

1 REFER TO WIRING DIAGRAM TASK 15-6.6 FOR FURTHER DETAILS







END OF TASK

15-7 APU TESTER

PARAGRAPH 15-7

TABLE OF CONTENTS

APU TESTER

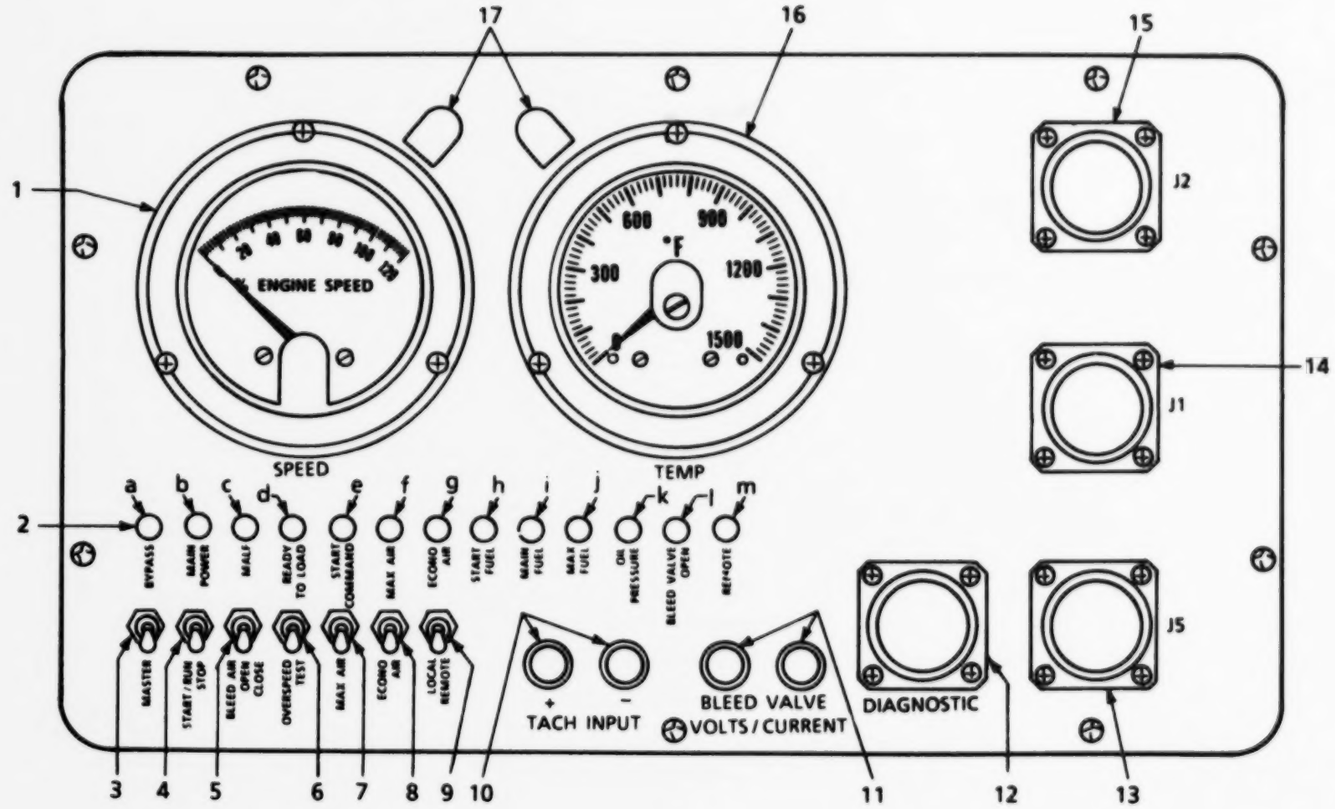
PARAGRAPH	DESCRIPTION	FUNCTION	PAGE
15-7	APU TESTER		15-137
15-7.1	PANEL LAYOUT	DRAWING	15-140
15-7.2	CONTROLS AND INDICATORS FUNCTIONS TABLE	TABLE	15-141
15-7.3	APU TESTER OPERATION	TASK	15-142

PARAGRAPH 15-7

LIST OF TABLES

ELECTRONIC SEQUENCE UNIT (ESU) TROUBLESHOOTING

TABLE NO.	DESCRIPTION	PAGE NO.
15-7.1	FUNCTION OF CONTROLS AND INDICATORS ON APU TESTER	15-141


17
16
15
1
ENGINE SPEED
SPEED
600
900
°F
300
1200
1500
TEMP
J2
J1
14
2
a
b
c
d
e
f
g
h
i
j
k
l
m
BYPASS
MAIN POWER
MALF
READY TO LOAD
START COMMAND
MAX AIR
ECONO AIR
START FUEL
MAIN FUEL
MAX FUEL
OIL PRESSURE
BLEED VALVE OPEN
REMOTE
MASTER
START / RUN STOP
BLEED AIR OPEN CLOSE
OVERSPEED TEST
MAX AIR
ECONO AIR
LOCAL REMOTE
+
–
TACH INPUT
BLEED VALVE
VOLTS / CURRENT
DIAGNOSTIC
J5
3
4
5
6
7
8
9
10
11
12
13

15-7.2 CONTROLS AND INDICATORS FUNCTIONS TABLE

TABLE 15-7.1
FUNCTION OF CONTROLS AND INDICATORS ON APU TESTER

ITEM ⚠1	NOMENCLATURE	FUNCTION
1	SPEED meter	Displays % engine speed from 0 to 120.
2	Color coded LED indicators	
	a. BYPASS (grn)	Lighted – indicates voltage is applied to start bypass valve.
	b. MAIN POWER (red)	Lighted – indicates main power is on.
	c. MALF (red)	Lighted – indicates malfunction has occurred and unit is shut down. Bite indication on ESU is checked for cause.
	d. READY TO LOAD (grn)	Lighted – indicates APU is ready to accept load.
	e. START COMMAND (grn)	Lighted – indicates start command is initiated.
	f. MAX. AIR (red)	(Not applicable)
	g. ECONO AIR (yel)	(Not applicable)
	h. START FUEL (yel)	Lighted – indicates start fuel valve voltage on approximately 5% RPM.
	i. MAIN FUEL (yel)	Lighted – indicates main fuel valve voltage on, approximately 14% RPM.
	j. MAX. FUEL (yel)	Lighted – indicates max. fuel voltage on, approximately 90% RPM + 5 sec. time out.
	k. OIL PRESSURE (yel)	Lighted when MAIN POWER is lit. Does NOT indicate Oil Pressure.
	l. BLEED VALVE OPEN (grn)	(Not applicable)
	m. REMOTE (red)	Lighted – indicates remote analog converter selected. (Actual magnetic pickup and thermocouple probe.)
3	MASTER switch	Controls 28 VDC power to Tester and ESU.
4	START / RUN / STOP switch	Initiates start sequence of ESU and generates start signal input to tester.
5	BLEED AIR OPEN / CLOSE switch	(Not applicable)
6	OVERSPEED TEST switch	(Not applicable)
7	MAX. AIR switch	(Not applicable)
8	ECONO AIR switch	(Not applicable)
9	LOCAL / REMOTE switch	Selects local or remote analog converter. LOCAL (down position) selects analog converter in aircraft. REMOTE (up position) selects analog converter in tester. Always used in the REMOTE position.
10	TACH INPUT jacks	To monitor magnetic pickup input and input simulation signals.
11	BLEED VALVE VOLTS / CURRENT jacks	(Not applicable)
12	DIAGNOSTIC connector	(Not applicable)
13	Connector J5	Output connector for harness connection to APU.
14	Connector J1	Input connector for harness connection to ESU.
15	Connector J2	Input / output connector for harness connection to ESU and Airframe harness.
16	TEMP meter	Displays exhaust gas temperature (EGT) in °F from 0 to 1500.
17	PANEL Lights	Lighted – indicates 28 VDC power is available to tester. Illuminates panel meters.

⚠1 Refer to Paragraph 15-7.1 for location of items.

15-7.3 APU TESTER OPERATION

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-329-4915
APU Tester 161226-200

Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23
TM 55-4920-431-13

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
External Electrical Power Off

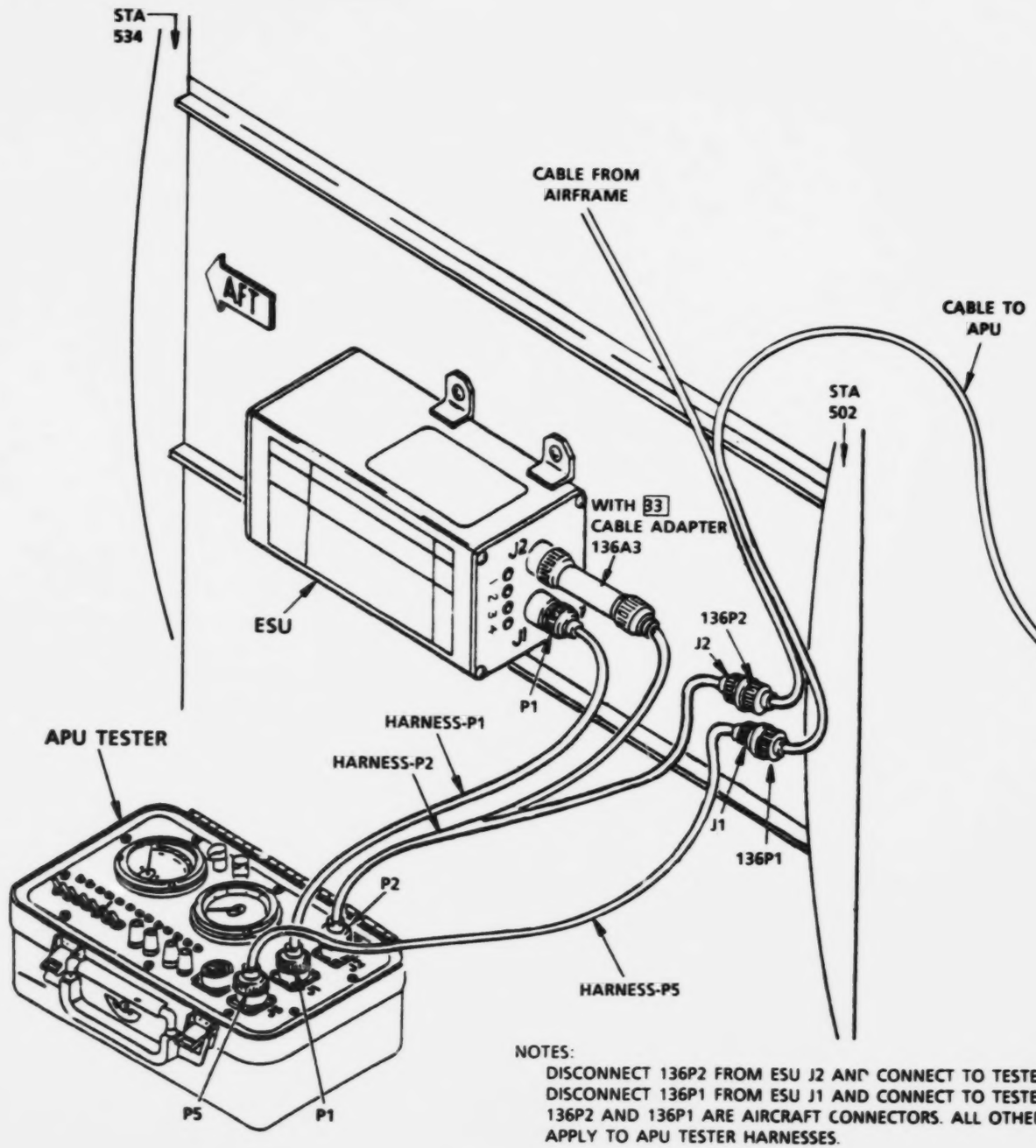
TASK	RESULT
1. Turn pressure equalizer knob to OPEN.	Pressure on cover is released.
2. Open case.	
3. Remove P1, P2 and P5 harnesses.	
4. Inspect equipment for any physical damage.	Repair or replace as required.
5. Zero meters.	
6. Connect harnesses to the applicable J1, J2 and J5 connectors on test set.	
7. Remove 136P1 and 136P2 from ESU and connect to the corresponding cable connectors of harnesses.	
8. Connect the remaining harness plugs to J1 and J2 of ESU.	Wiring should be similar to that shown in accompanying diagram.
9. Perform test in accordance with applicable task.	

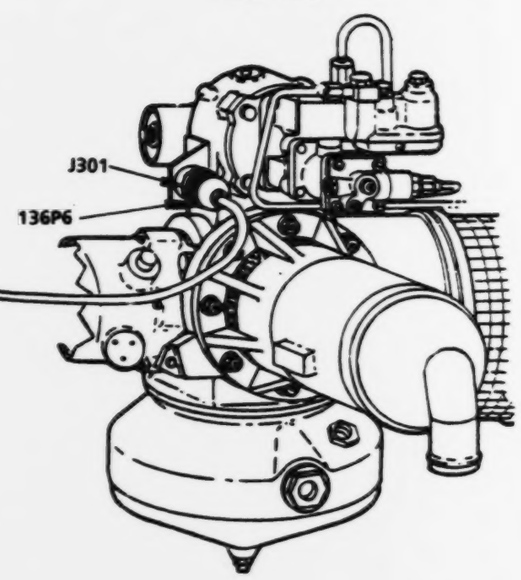
TASK	RESULT
NOTE During tests, leave BLEED AIR OPEN/CLOSE switch, MAX. AIR switch, and ECONO AIR switch in down position.	
10. After completion of task, return all tester switches to DOWN position.	
11. Disconnect harnesses and stow in cover.	
12. Close cover and rotate pressure equalizer knob to CLOSE.	Tester is secured.
13. Report any tester operation problems on proper form as described in DA Pam 738-751.	

FOLLOW-ON MAINTENANCE:
TM55-4920-431-13
REFER TO TASK BEING PERFORMED.

GO TO NEXT PAGE

15-7.3 APU TESTER OPERATION (CONTINUED)





NOTES:
DISCONNECT 136P2 FROM ESU J2 AND CONNECT TO TESTER AS SHOWN.
DISCONNECT 136P1 FROM ESU J1 AND CONNECT TO TESTER AS SHOWN.
136P2 AND 136P1 ARE AIRCRAFT CONNECTORS. ALL OTHER DESIGNATIONS APPLY TO APU TESTER HARNESSES.

END OF TASK

CHAPTER 16

MISSION EQUIPMENT TROUBLESHOOTING

CHAPTER 16
MISSION EQUIPMENT TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 16 contains procedures for Mission Equipment troubleshooting. Each system and failure symptom is listed below. Included in this chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for the Mission Equipment.

Refer to TM 55-1520-240-23 for required maintenance procedures.

SYSTEM	PARA
EXTERNAL CARGO HOOK SYSTEM	16-1
FLARE DISPENSER SYSTEM	16-2

FAILURE SYMPTOM LIST

EXTERNAL CARGO HOOK SYSTEM

SYMPTOM	TASK
AFT CARGO HOOK DOES NOT OPEN	16-1.4
AFT HOOK OPEN CAPSULE DOES NOT COME ON WHEN AFT CARGO HOOK OPENS	16-1.4
AFT HOOK OPEN CAPSULE LIT WHEN AFT CARGO HOOK CLOSED	16-1.4
ARMED SW FAIL LIGHT DOES NOT COME ON WITH MASTER SWITCH AT ARM	16-1.4
CARGO HOOK CONT EMER REL CIRCUIT BREAKER DOES NOT STAY CLOSED	16-1.4
CARGO HOOK CONT NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED	16-1.4
CARGO HOOK OR HOOKS DO NOT RELEASE WHEN EMERG SWITCH SET TO REL ALL	16-1.4
CARGO HOOK PWR EMER REL CIRCUIT BREAKER DOES NOT STAY CLOSED	16-1.4
CARGO HOOK PWR NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED	16-1.4
CENTER CARGO HOOK DOES NOT OPEN	16-1.4
CENTER CARGO HOOK DOES NOT STAY OPEN FOR 10 TO 14 SECONDS AFTER EMERG SWITCH RELEASED FROM REL ALL	16-1.4
DUAL HOOK FAULT CAPSULE LIT	16-1.4
DUAL HOOK FAULT LIGHT DOES NOT COME ON WITH HOOK DISCONNECTED	16-1.4
DUAL HOOK RELAY BOX LIGHT(S) DO NOT COME ON WHEN PRESSED	16-1.4
FORWARD CARGO HOOK DOES NOT OPEN	16-1.4
FWD HOOK OPEN CAPSULE DOES NOT COME ON WHEN FORWARD CARGO HOOK OPENS	16-1.4
FWD HOOK OPEN CAPSULE LIT WHEN FORWARD CARGO HOOK CLOSED	16-1.4
FORWARD OR AFT CARGO HOOK DOES NOT OPEN WHEN TANDEM HOOK RELEASE LEVER IS PULLED	16-1.4
FWD OR AFT HOOK LOADED LIGHT IS LIT WHEN CARGO HOOK IS UNLOADED	16-1.4
FWD OR AFT HOOK LOADED LIGHT DOES NOT COME ON WHEN PRESSED	16-1.4
HOOK LOADED LIGHT DOES NOT COME ON WHEN FORWARD OR AFT CARGO HOOK IS LOADED	16-1.4

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FAILURE SYMPTOM LIST (Continued)

EXTERNAL CARGO HOOK SYSTEM (Continued)

SYMPTOM	TASK
MID HOOK OPEN CAPSULE DOES NOT COME ON WHEN CENTER CARGO HOOK OPENS	16-1.4
MID HOOK OPEN CAPSULE LIT WHEN CENTER CARGO HOOK CLOSED	16-1.4
RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN COPILOT'S CARGO HOOK RELEASE SWITCH PRESSED	16-1.4
RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN HOIST OPERATOR'S CARGO HOOK RELEASE SWITCH PRESSED	16-1.4
RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN PILOT'S CARGO HOOK RELEASE SWITCH PRESSED	16-1.4

FLARE DISPENSER SYSTEM

SYMPTOM	TASK
ARM LIGHT DOES NOT COME ON WHEN ARM SAFE SWITCH SET TO ARM	16-2.3
CHAFF CIRCUIT BREAKER WILL NOT STAY CLOSED	16-2.3
FLARE COUNTER DOES NOT INDICATE **00** WHEN **RIPPLE FIRE** SWITCH IS HELD UP	16-2.3
FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN A CABIN FIRING SWITCH PRESSED AND RELEASED	16-2.3
FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN PILOT OR COPILOT **FLARE DISP** SWITCH PRESSED AND RELEASED	16-2.3
FLARE COUNTER SEQUENCES FROM **30** TO **00** WHEN **DISP CONT** PANEL **ARM SAFE** SWITCH SET TO **ARM**	16-2.3
LDG GR SW STATUS LIGHT DOES NOT COME ON	16-2.3
LDG GR SW STATUS LIGHT IS ON	16-2.3
LDG GR SW STATUS, READY TO FIRE, AND LDG GR SW BYPASS LIGHTS DO NOT COME ON	16-2.3
LDG GR SW STATUS, READY TO FIRE, OR LDG GR SW BYPASS LIGHTS DO NOT COME ON WHEN PRESSED	16-2.3
READY TO FIRE LIGHT DOES NOT COME ON	16-2.3

GO TO NEXT PAGE

MISSION EQUIPMENT ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD005		150	CONSOLE — FWD CTR INSTR PNL			
GD040		150	CONSOLE — FWD CTR INSTR PNL			
GD123		151	RH CABIN AFT	482	-5	50R
GD189		151	RH CABIN	265	30	50R
GD190		151	RH CABIN	265	30	50R
GD191		151	LH CABIN	255	30	50L
GD193		151	CABIN — UNDERFLOOR	330	-36	40L
GD259		151	CABIN — UNDERFLOOR	255	-36	30L
GD260		151	CABIN — UNDERFLOOR	410	-36	20L
GD289		151	LH CABIN — AFT	535	32	52L
GD308		151	RH CABIN	300	40	52R
GD309		151	RH CABIN	300	40	52R
GD311		151	LH CABIN — AFT	570	20	52L
GD323		151	LH CABIN — AFT	535	32	52L
TB6			CONSOLE — FWD FLOOR			
TB7			CONSOLE — FWD CTR INSTR PNL			
TB18			COCKPIT UNDERFLOOR — COPILOT	87	-13	11L
TB27			RH CABIN	332	-13	11L
TB36			OVERHEAD PANEL — COCKPIT	80	40	12R
TB59			NO. 1 PDP SIDE PANEL	90	-15	30L
TB62			NO. 2 PDP SIDE PANEL	90	-15	30R
TB401			RH CABIN — FLARE DISP	300	40	52R
147K1	MS24149-D1	106	LH POD	185	-20	55L
148K2	BACR13CR-2AB	103	RH AFT CABIN	482	22	50R
232K2	BACR13CG-2AB	103	CONSOLE — FLOOR			
132J11	MS3470W14-19S	21	HOIST OPR PNL	340	40	50R
134P1	MS3476W14-19S	21	OVHD PNL — HOIST/CARGO PNL — J1			
134P2	MS3476W14-19SW	21	OVHD PNL — HOIST/CARGO PNL — J2			
134P3	MS3476W16-8S	22	DUAL HOOK RELAY BOX — J1	270	35	50R
134P4	MS3476W16-26S	24	DUAL HOOK RELAY BOX — J2	270	35	50R
134P5	MS3476W10-6S	15	EMERG HOOK REL RELAY BOX — J1	270	25	50L
134P6	MS3476W16-8S	22	EMERG HOOK REL RELAY BOX — J2	270	25	50L
134J7	MS3474W16-8S	22	FWD CARGO HOOK RCPT	248	-36	12L
134P7		22	FWD CARGO HOOK	248	-37	12L
134J8	MS3474W10-6S	15	CTR CARGO HOOK RCPT	331	-36	40L
134P8	MS3476W10-6P	15	CTR CARGO HOOK	331	-36	40L
134J9	MS3474W16-8S	22	AFT CARGO HOOK RCPT	409	-36	12L
134P9		22	AFT CARGO HOOK	409	-37	12L
134P10	M83723-95A0803N	29	CARGO HOOK NORM REL VALVE — IN TUNNEL AREA	332	51	17L
147P1	MS3476W14-19S	21	CONSOLE, DISP CONT			
147P2	MS3476W12-10S	17	RH CABIN, TIMER	300	30	52R
147P3		21	LH AFT, RAMP AREA	560	10	52L
147P4	MS3476W10-6S	15	LH AFT, RAMP AREA	536	40	52L
147J5	M83723-84A1005N	30	LH AFT, CABIN	400	40	52L
147J6	M83723-84A1005N	30	LH FWD, CABIN	200	40	52L
147J7	M83723-84A1005N	30	RH AFT, CABIN	400	40	52L
147J8	M83723-84A1005N	30	RH FWD, CABIN	105	40	52R
202P4	MS3476W14-19S	21	CONSOLE, CONTROL IND			
232P1	MS3476W20-41S	26	CONSOLE — CTR INST PNL — MASTER CAUTION PANEL			
232P2	MS3476W16-26S	24	CONSOLE — CTR INST PNL — MASTER CAUTION PANEL			
300J1	M83723-74A2041N	40	NO. 1 PDP			
300P1	M83723-75A2041N	40	NO. 1 PDP			
300J4	M83723-74A2461N	43	NO. 1 PDP			
300P4	M83723-75A2461N	43	NO. 1 PDP			
300J5	M83723-74A2041N	40	NO. 2 PDP			
300P5	M83723-75A2041N	40	NO. 2 PDP			
300J15	M83723-74A24617	43	CONSOLE — UNDERFLOOR	85	-20	
300P15	M83723-75A24617	43	CONSOLE — UNDERFLOOR	85	-20	
300J18	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P18	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J19	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J20	M83723-74A2461N	43	OVERHEAD PANEL — COCKPIT			
300P20	M83723-75A2461N	43	OVERHEAD PANEL — COCKPIT			
300J23	M83723-74A2255N	42	OVERHEAD PANEL — COCKPIT			
300P23	M83723-75A2255N	42	OVERHEAD PANEL — COCKPIT			

MISSION EQUIPMENT ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
300J29	MS3474W14-19S	21	COCKPIT — UNDERFLOOR — PILOT	65	-27	25R
300P29	MS3476W14-19P	21	COCKPIT — UNDERFLOOR — PILOT	65	-27	25R
300J30	MS3474W14-19S	21	COCKPIT — UNDERFLOOR — COPILOT	70	-27	25L
300J48	M83723-74A2461N	43	ELECTRONICS COMPARTMENT — OVHD	120	40	20L
300P48	M83723-75A2461N	43	ELECTRONICS COMPARTMENT — OVHD	120	40	20L
300J50	M83723-73A2461N	43	ELECTRONICS COMPARTMENT — OVHD	120	40	20L
300P50	M83723-76A2461N	43	ELECTRONICS COMPARTMENT — OVHD	120	40	20L
300J52	M83723-74A2255N	42	AFT CROWN	460	45	30L
300P52	M83723-75A2255N	42	AFT CROWN	460	45	30L
300J53	M83723-74A2255N	42	AFT CROWN	460	45	20R
300P53	M83723-75A2255N	42	AFT CROWN	460	45	20R
300J54	M83723-74A2461N	43	AFT CROWN	460	50	20L
300P54	M83723-75A2461N	43	AFT CROWN	460	50	20L
300J64	M83723-73A24617	43	CONSOLE — UNDERFLOOR	85	-20	
300P64	M83723-76A24617	43	CONSOLE — UNDERFLOOR	85	-20	
300J68	M83723-73A22556	42	HEATER COMPARTMENT — OVHD	105	40	30R
300P68	M83723-76A22556	42	HEATER COMPARTMENT — OVHD	105	40	30R

MISSION EQUIPMENT SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

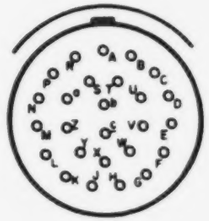
RECEPTACLE

15

PLUG

15

RECEPTACLE



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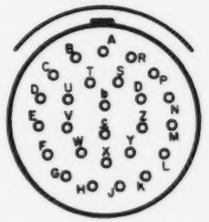

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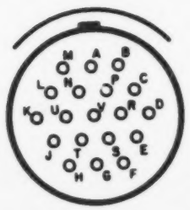

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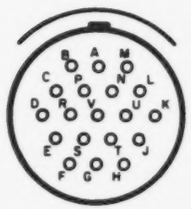

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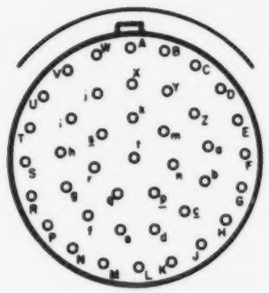

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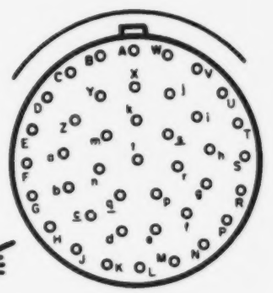

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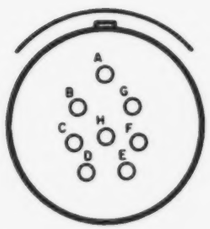

22

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17319

GO TO NEXT PAGE

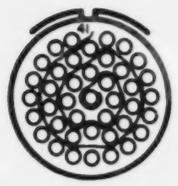
MISSION EQUIPMENT ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

30

PLUG

30



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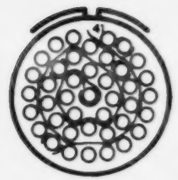

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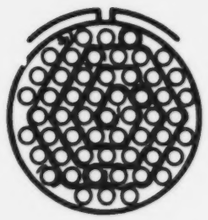

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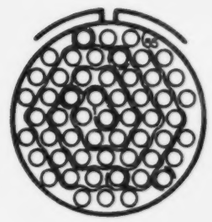

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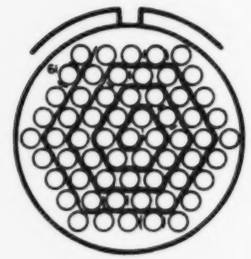
RECEPTACLE



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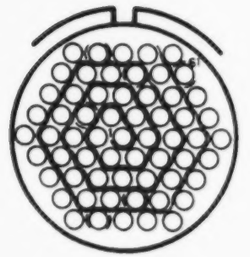
PLUG



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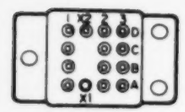
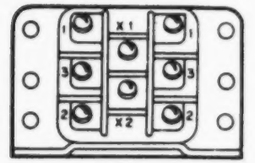
RELAY



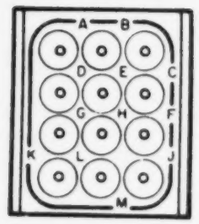
103

RELAY



106

GND MODULE



150

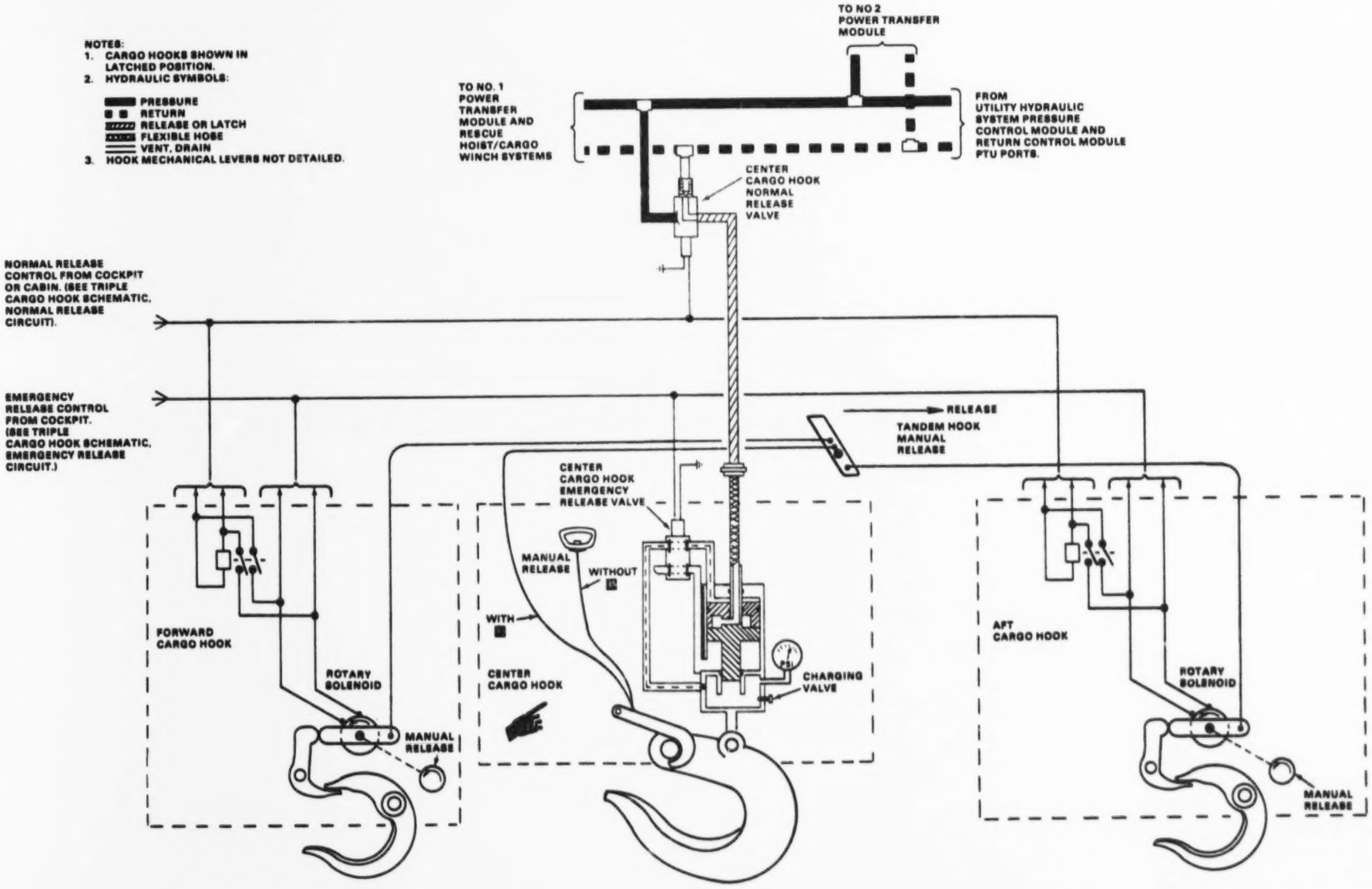
GND STUD

151

90 x 54

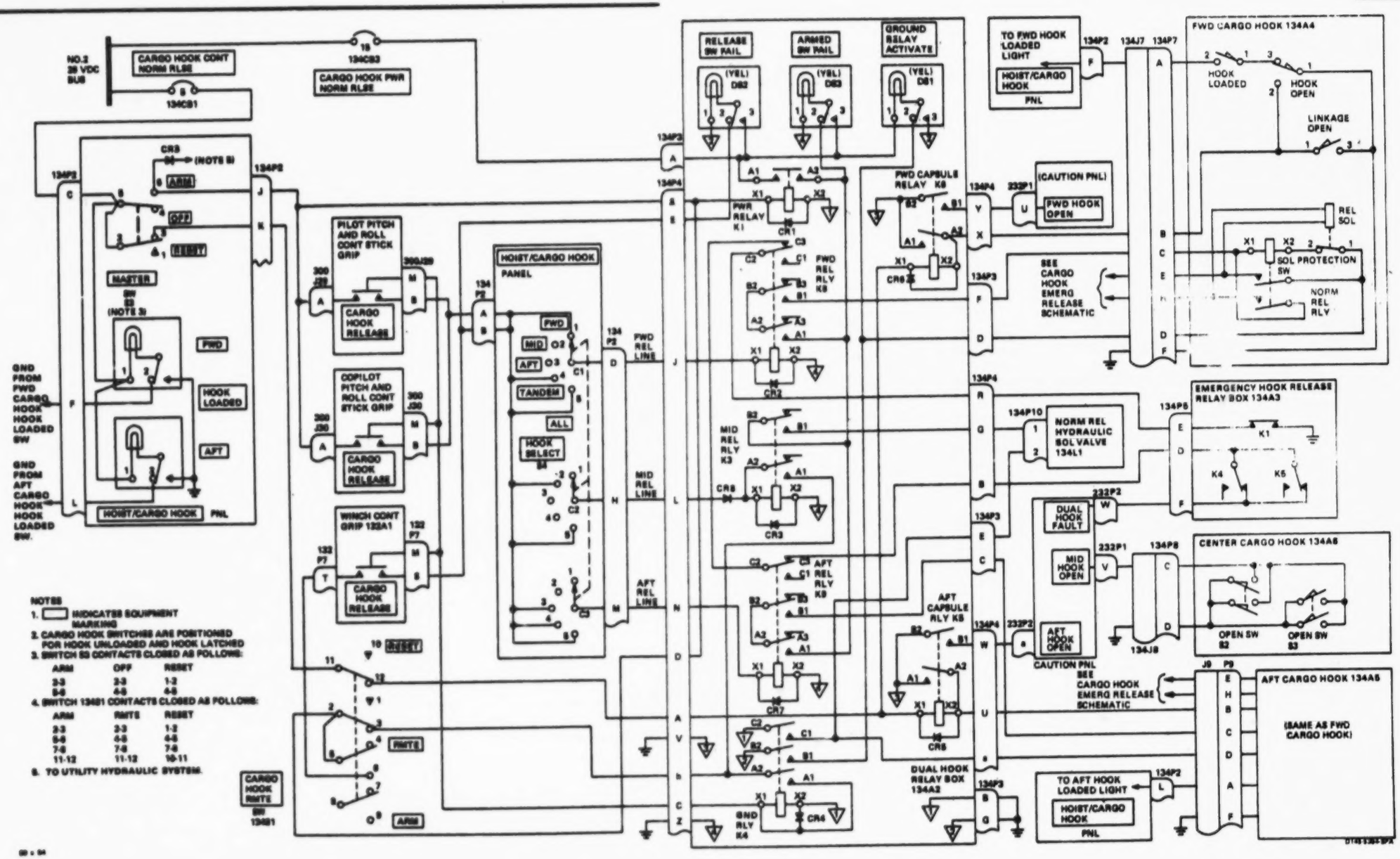
DH45-11873-SPA

16-1 EXTERNAL CARGO HOOK SYSTEM


NOTES:
1. CARGO HOOKS SHOWN IN LATCHED POSITION.
2. HYDRAULIC SYMBOLS:
PRESSURE
RETURN
RELEASE OR LATCH
FLEXIBLE HOSE
VENT, DRAIN
3. HOOK MECHANICAL LEVERS NOT DETAILED.
TO NO 2 POWER TRANSFER MODULE
TO NO. 1 POWER TRANSFER MODULE AND RESCUE HOIST/CARGO WINCH SYSTEMS
FROM UTILITY HYDRAULIC SYSTEM PRESSURE CONTROL MODULE AND RETURN CONTROL MODULE PTU PORTS.
CENTER CARGO HOOK NORMAL RELEASE VALVE
NORMAL RELEASE CONTROL FROM COCKPIT OR CABIN. (SEE TRIPLE CARGO HOOK SCHEMATIC, NORMAL RELEASE CIRCUIT).
EMERGENCY RELEASE CONTROL FROM COCKPIT. (SEE TRIPLE CARGO HOOK SCHEMATIC, EMERGENCY RELEASE CIRCUIT.)
RELEASE
TANDEM HOOK MANUAL RELEASE
CENTER CARGO HOOK EMERGENCY RELEASE VALVE
MANUAL RELEASE
WITHOUT
WITH
FORWARD CARGO HOOK
ROTARY SOLENOID
MANUAL RELEASE
CENTER CARGO HOOK
PSI
CHARGING VALVE
AFT CARGO HOOK
ROTARY SOLENOID
MANUAL RELEASE
17328

GO TO NEXT PAGE

16-1.1 EXTERNAL CARGO HOOK SYSTEM SCHEMATIC-NORMAL RELEASE MODE



NOTES

1. ▭ INDICATES EQUIPMENT MARKING
2. CARGO HOOK SWITCHES ARE POSITIONED FOR HOOK UNLOADED AND HOOK LATCHED
3. SWITCH S3 CONTACTS CLOSED AS FOLLOWS:

ARM	OFF	RESET
2-3	2-3	1-2
5-6	4-5	4-5

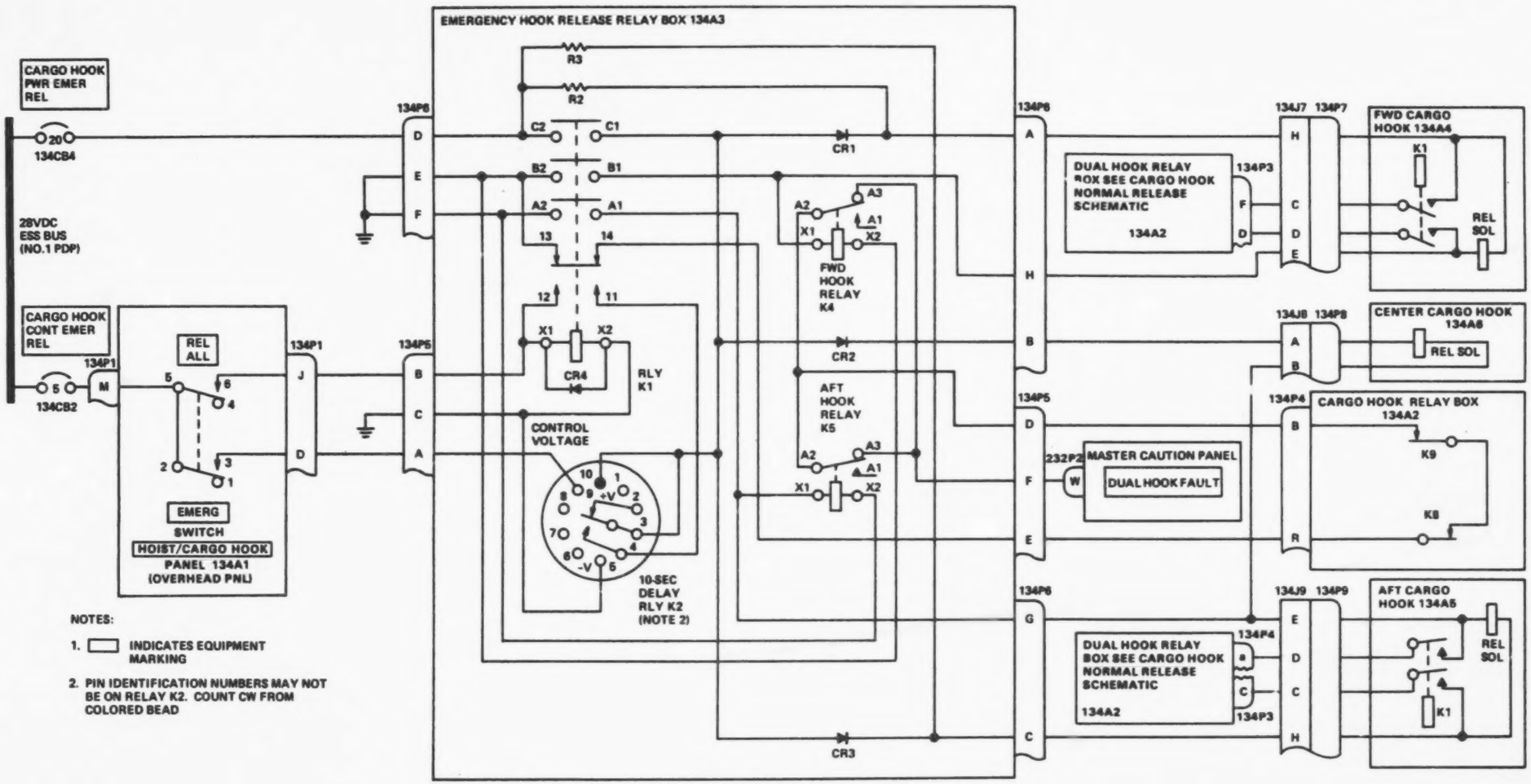
4. SWITCH 134S1 CONTACTS CLOSED AS FOLLOWS:

ARM	RMTE	RESET
2-3	2-3	1-2
5-6	4-5	4-5
7-8	7-8	7-8
11-12	11-12	10-11

5. TO UTILITY HYDRAULIC SYSTEM.

GO TO NEXT PAGE

16-1.1 EXTERNAL CARGO HOOK SYSTEM SCHEMATIC- EMERGENCY RELEASE MODE

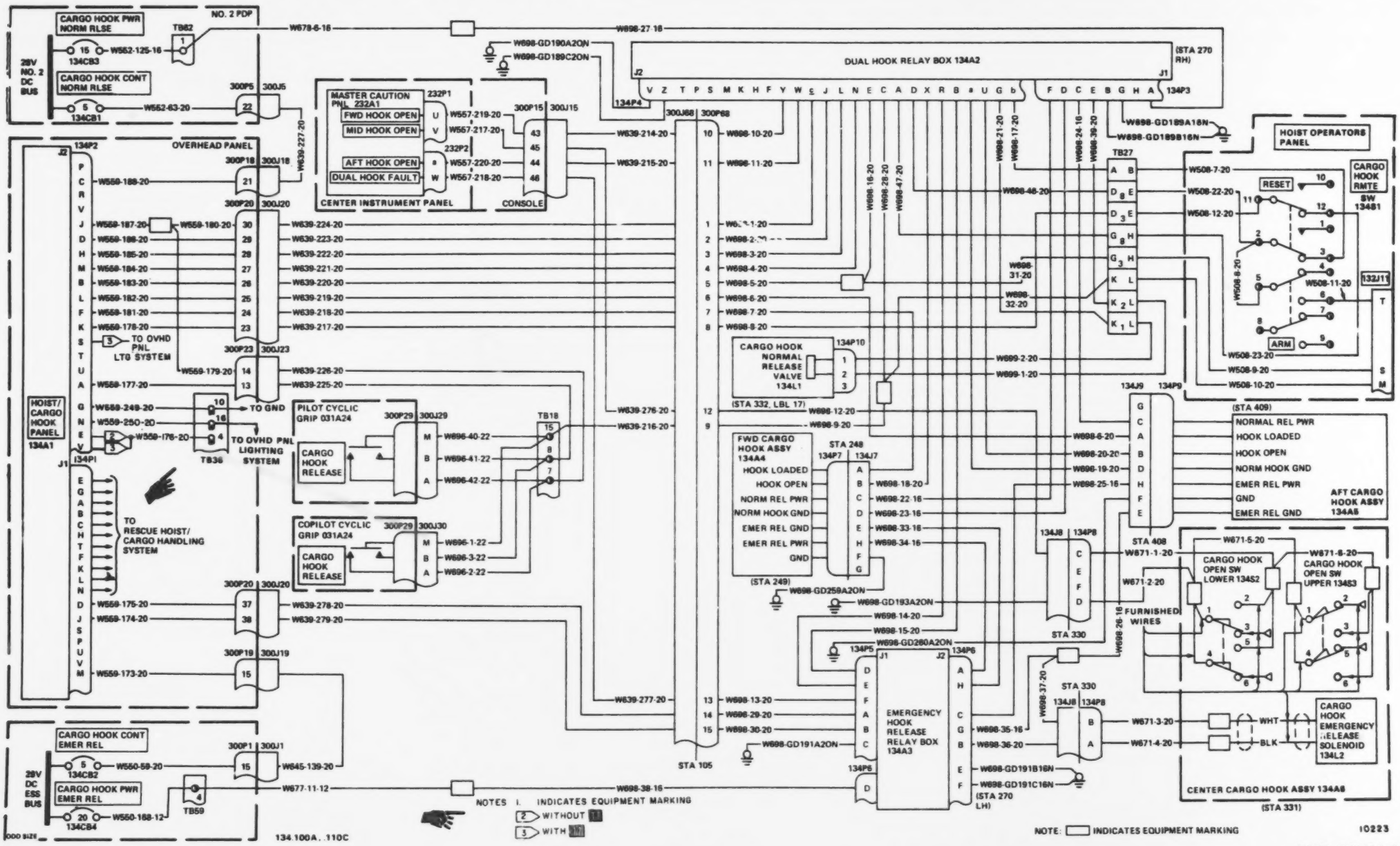


NOTES:

1. ▭ INDICATES EQUIPMENT MARKING
2. PIN IDENTIFICATION NUMBERS MAY NOT BE ON RELAY K2. COUNT CW FROM COLORED BEAD

90 x 54

D146-5383-6PA


28V NO. 2 DC BUS
NO. 2 PDP
CARGO HOOK PWR NORM RLSE
CARGO HOOK CONT NORM RLSE
TB62
134CB3
134CB1
W562-125-16
W562-63-20
W678-6-18
W698-27-18
W698-GD190A2ON
W698-GD189C2ON
DUAL HOOK RELAY BOX 134A2
(STA 270 RH)
134P3
134P4
300P5 300J5
300P15 300J15
300P18 300J18
300P20 300J20
300P23 300J23
300P19 300J19
300P68 300J68
MASTER CAUTION PNL 232A1
FWD HOOK OPEN
MID HOOK OPEN
AFT HOOK OPEN
DUAL HOOK FAULT
232P1
232P2
W557-219-20
W557-217-20
W557-220-20
W557-218-20
CENTER INSTRUMENT PANEL
CONSOLE
OVERHEAD PANEL
134P2
W559-188-20
W559-187-20
W559-180-20
W559-186-20
W559-185-20
W559-184-20
W559-183-20
W559-182-20
W559-181-20
W559-178-20
TO OVHD PNL LTG SYSTEM
W559-179-20
W559-177-20
W559-249-20
W559-250-20
W559-176-20
TO GND
TO OVHD PNL LIGHTING SYSTEM
TB36
HOIST/ CARGO HOOK PANEL 134A1
134P1
TO RESCUE HOIST/ CARGO HANDLING SYSTEM
W559-175-20
W559-174-20
W559-173-20
W639-224-20
W639-223-20
W639-222-20
W639-221-20
W639-220-20
W639-219-20
W639-218-20
W639-217-20
W639-226-20
W639-225-20
W639-278-20
W639-279-20
W639-277-20
W639-276-20
W639-216-20
W639-214-20
W639-215-20
PILOT CYCLIC GRIP 031A24
COPILOT CYCLIC GRIP 031A24
CARGO HOOK RELEASE
300P29 300J29
300P29 300J30
TB18
W696-40-22
W696-41-22
W696-42-22
W696-1-22
W696-3-22
W696-2-22
W698-10-20
W698-11-20
W698-1-20
W698-2-20
W698-3-20
W698-4-20
W698-5-20
W698-6-20
W698-7-20
W698-8-20
W698-12-20
W698-9-20
W698-13-20
W698-29-20
W698-30-20
W698-GD191A2ON
STA 105
CARGO HOOK NORMAL RELEASE VALVE 134L1
134P10
(STA 332, LBL 17)
FWD CARGO HOOK ASSY 134A4
HOOK LOADED
HOOK OPEN
NORM REL PWR
NORM HOOK GND
EMER REL PWR
EMER REL GND
GND
(STA 249)
STA 248
134P7 134J7
W698-18-20
W698-22-16
W698-23-16
W698-33-16
W698-34-16
W698-GD259A2ON
W698-GD193A2ON
W698-14-20
W698-15-20
W698-GD260A2ON
134P5 134P6
EMERGENCY HOOK RELEASE RELAY BOX 134A3
W698-35-16
W698-36-20
W698-GD191B16N
W698-GD191C16N
(STA 270 LH)
W698-16-20
W698-28-20
W698-47-20
W698-21-20
W698-17-20
W698-24-16
W698-39-20
W698-GD189A16N
W698-GD189B16N
W698-48-20
W698-31-20
W698-32-20
W698-2-20
W698-1-20
W698-6-20
W698-20-20
W698-19-20
W698-25-16
TB27
HOIST OPERATORS PANEL
CARGO HOOK RMTE SW 13481
RESET
ARM
W508-7-20
W508-22-20
W508-12-20
W508-8-20
W508-11-20
W508-23-20
W508-9-20
W508-10-20
132J11
134J9 134P9
(STA 409)
NORMAL REL PWR
HOOK LOADED
HOOK OPEN
NORM HOOK GND
EMER REL PWR
GND
EMER REL GND
AFT CARGO HOOK ASSY 134A5
STA 408
134J8 134P8
STA 330
W698-37-20
W698-26-16
FURNISHED WIRES
W671-5-20
W671-1-20
W671-2-20
W671-6-20
W671-3-20
W671-4-20
CARGO HOOK OPEN SW LOWER 13452
CARGO HOOK OPEN SW UPPER 13453
CARGO HOOK EMERGENCY RELEASE SOLENOID 134L2
WHT
BLK
CENTER CARGO HOOK ASSY 134A6
(STA 331)
CARGO HOOK CONT EMER REL
CARGO HOOK PWR EMER REL
134CB2
134CB4
W550-58-20
W550-168-12
W677-11-12
W698-38-16
TB59
300P1 300J1
W645-139-20
NOTES 1. INDICATES EQUIPMENT MARKING
2 WITHOUT
3 WITH
134-100A, -110C
NOTE: INDICATES EQUIPMENT MARKING
10223

END OF TASK

16-1.3 EXTERNAL CARGO HOOK SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

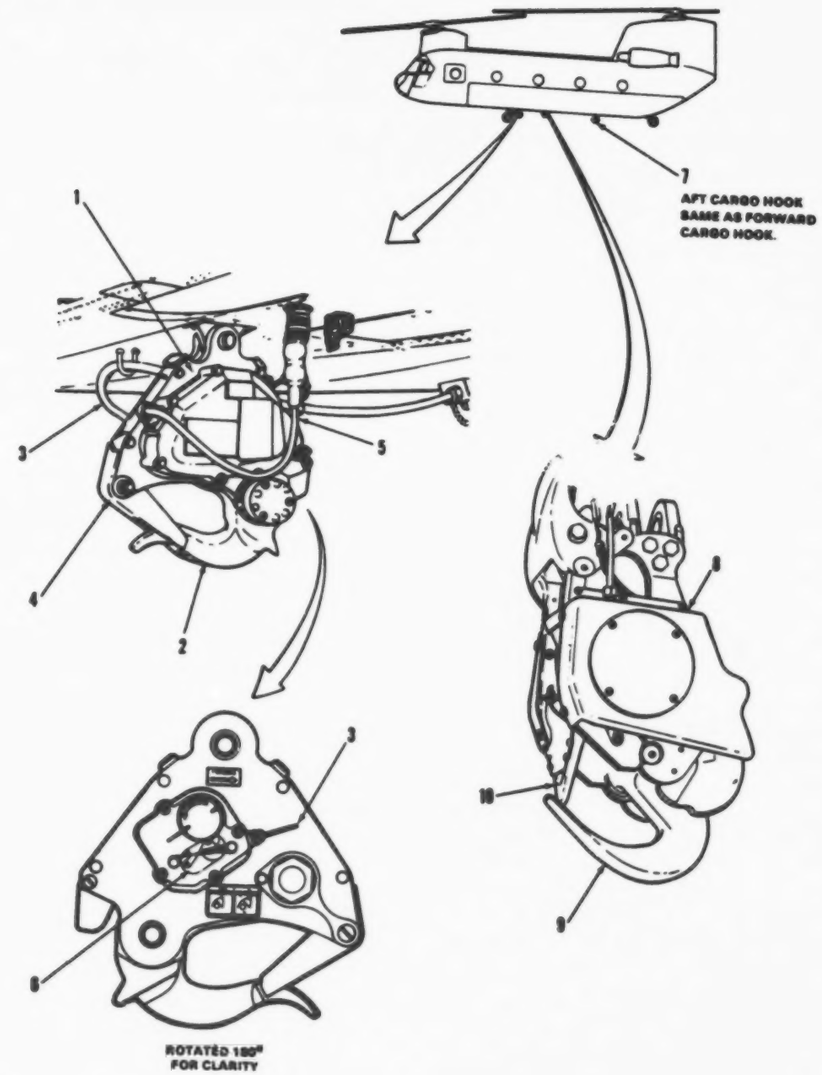
Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Center Cargo Hook Access Panel Open
Center Cargo Hook Unstowed
Center Tunnel Cover Open

TASK	RESULT
1. **Check forward cargo hook (1).**	If load beam (2) is open, close it. If it does not stay closed check rigging of tandem hook release rigging. Adjust as required (TM 55-1520-240-23). If rigging is okay and load beam is still open, replace cargo hook. If control assembly (3) is damaged, replace it. If keeper (4) is damaged, replace it. If wire harness (5) is damaged replace it. If window (6) is damaged, replace it.
2. **Repeat step (1) for aft cargo hook (7).**	
3. **Check center cargo hook (8).**	If hook (9) is open, close it. If it does not stay closed service cargo hook actuator and check manual release cams (TM 55-1520-240-23). If hook still can not be closed, replace cargo hook (8). If keeper (10) is forward of hook (9) or damaged, adjust or replace it. If release mechanism (11) is damaged, replace it. If wire harness or hydraulic hose (12 or 13) is damaged, replace it.



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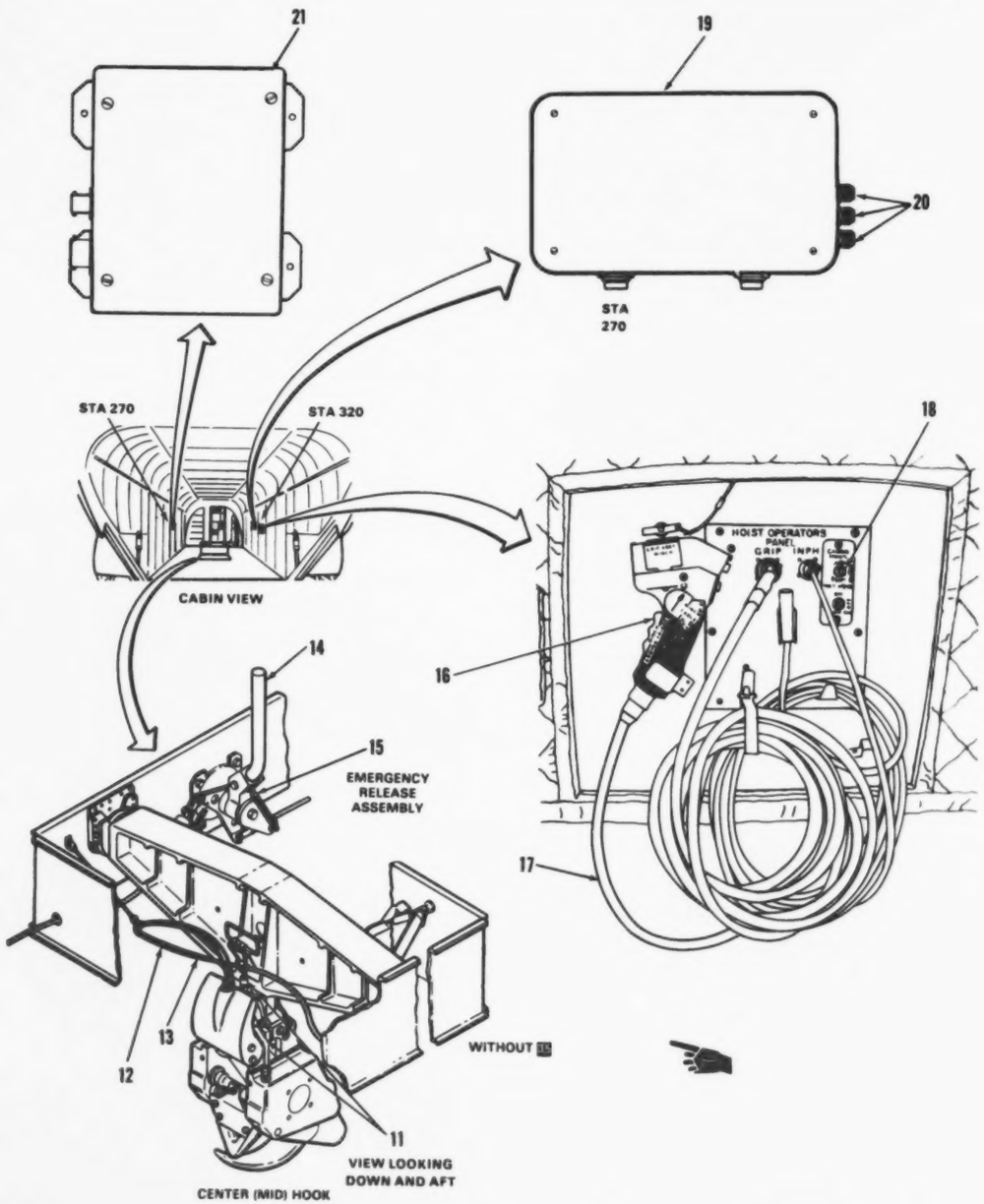
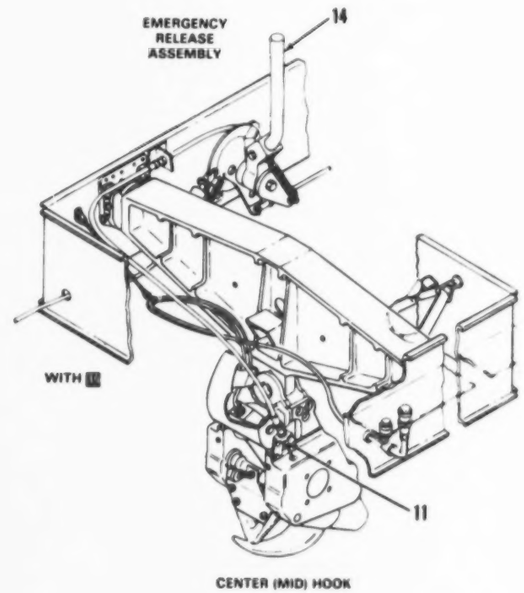
16-1.3 EXTERNAL CARGO HOOK SYSTEM VISUAL CHECK (Continued)



TASK	RESULT
4. Lift emergency cargo hook release lever (14) from stowed position. **Check lever mechanism (15).**	If lever (14) or any part of mechanism (15) is loose or damaged, tighten or replace it as required.
5. **Check hoist operator's grip (16) and cable assembly (17).**	If grip (16) is damaged, replace it. If cable assembly (17) is damaged, replace it.
6. **Check CARGO HOOK switch (18).**	If switch (18) is loose or damaged, tighten or replace it as required.
7. **Check dual hook relay box (19).**	If box (19) is loose or damaged, tighten or replace it as required. If wiring or connectors to box are damaged, repair or replace them as required. If any light (20) is damaged, replace box.
8. **Check emergency hook release relay box (21).**	If box (21) is loose or damaged, tighten or replace it as required. If wiring or connectors to box are damaged, repair or replace them as required.



17728

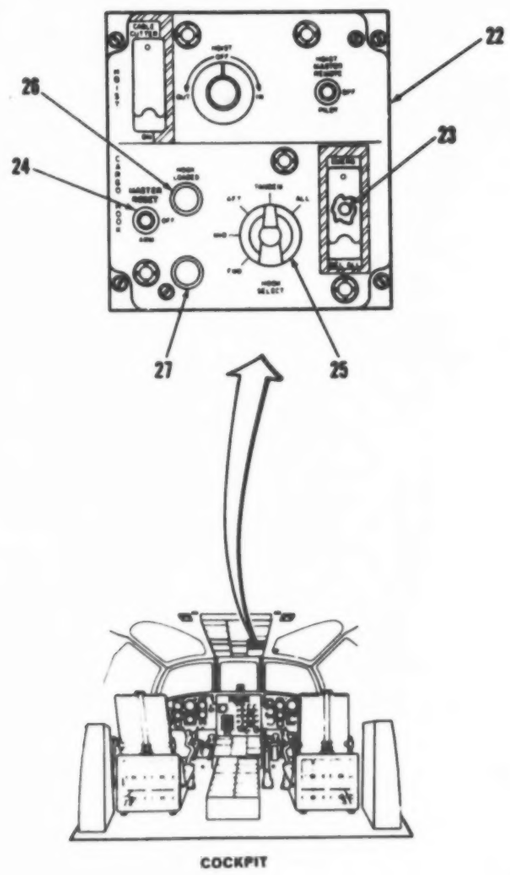
GO TO NEXT PAGE

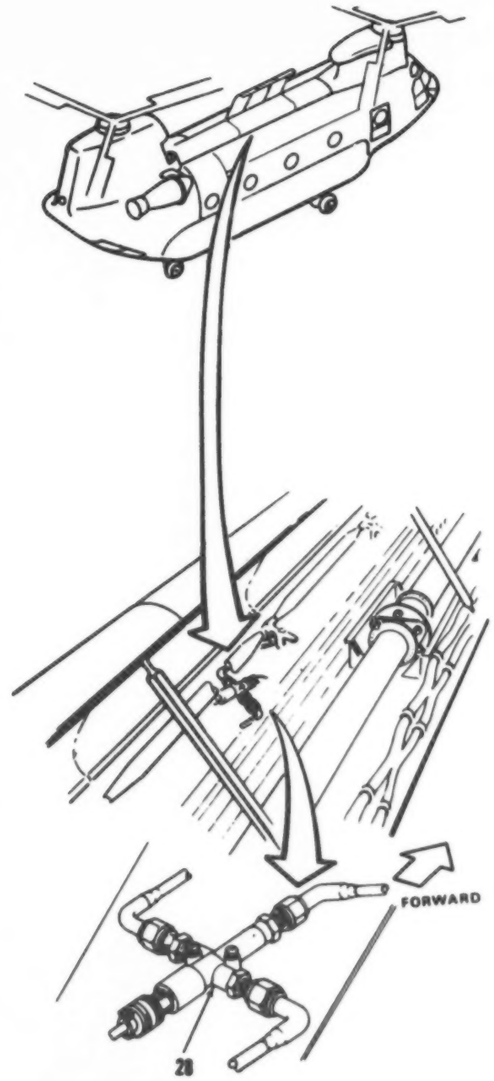
16-1.3 EXTERNAL CARGO HOOK SYSTEM VISUAL CHECK (Continued)

TASK	RESULT
9. **Check HOIST/CARGO HOOK panel (22).**	If switch (23 or 24), knob (25), or light (26 or 27) is loose or damaged, replace panel (22).
10. **Check cargo hook normal release valve (28).**	If valve (28) is loose or damaged, tighten or replace it. If wiring or connector to valve is damaged, repair or replace it as required.

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Close center tunnel cover.





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D145-6364-SPA

END OF TASK

16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Rope, 15 Foot
Without [illegible] Load 20-25 Pounds (3)
With [illegible] Load 20-25 Pounds (2) Fwd and Aft Hook
Load 45-50 Pounds (1) Center Hook
Wood Plank, 2 Inches x 4 Inches x 4 Feet
Dial Indicating Scale, 0 to 50 Pounds
Stopwatch
Inspection Mirror

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On
Visual Check of External Cargo Hook System Performed (Task 16-1.3)
Area Beneath Three Cargo Hooks Clear of Obstructions

TASK	RESULT
1. **Check that MASTER switch (1)** is at OFF.	If switch (1) is not at OFF, set it to OFF.
2. **Check that HOOK SELECT switch (2)** is at FWD.	If switch (2) is not at FWD, set it to FWD.
3. **Check that switch guard (3) over EMERG** switch is down.	If switchguard (3) is up, close it.
4. **Check that CARGO HOOK switch (4)** is at RMTE.	If switch (4) is not at RMTE, set it to RMTE.
5. **Check FWD and AFT HOOK LOADED LIGHT lights (5 and 6).**	Both lights (5 and 6) shall be out. If either light is on, go to task 16-1.5.
6. **Press and release FWD HOOK LOADED light (5).**	Light (5) shall momentarily come on. If it does not, go to task 16-1.6.
7. **Press and release AFT HOOK LOADED light (6).**	Light (6) shall momentarily come on. If it does not, go to task 16-1.6.
8. **Check** that **CARGO HOOK EMER REL PWR and CONTcircuit breakers (7 and 8)** are closed.	If CARGO HOOK EMER REL PWR or CONT circuit breaker (7 or 8) is open, close it. If EMERG REL PWR circuit breaker (7) opens again, go to task 16-1.7. If EMER REL CONT circuit breaker (8) opens again, go to task 16-1.8.
9. **Check** that **CARGO HOOK NORM RLSE PWR and CONT circuit breakers (9 and 10)** are closed.	If CARGO HOOK NORM RLSE PWR or CONT circuit breaker (9 or 10) is open, close it. If NORM RLSE PWR circuit breaker (9) opens again, go to task 16-1.9. If NORM RLSE CONT circuit breaker (10) opens again, go to task 16-1.10.

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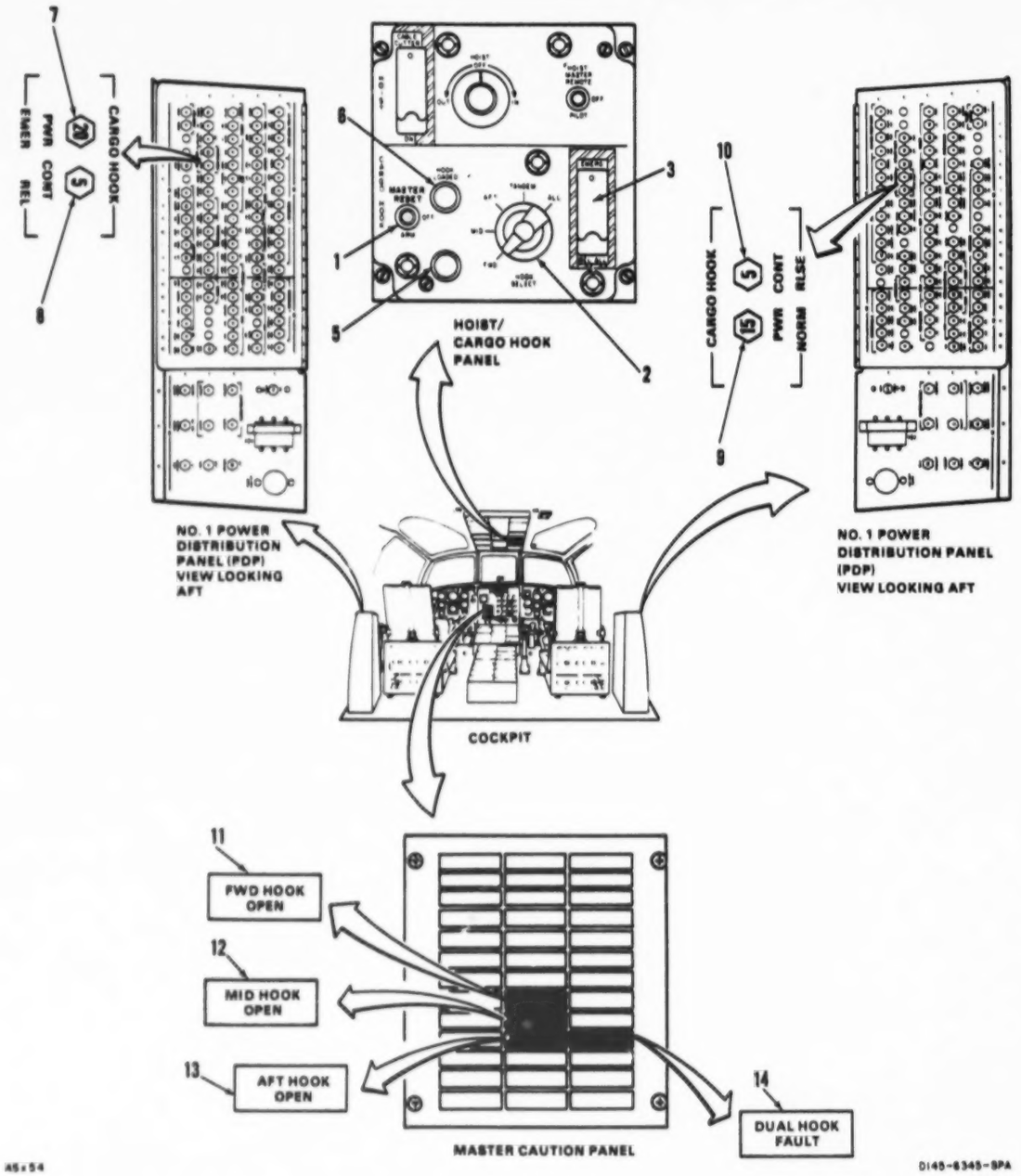

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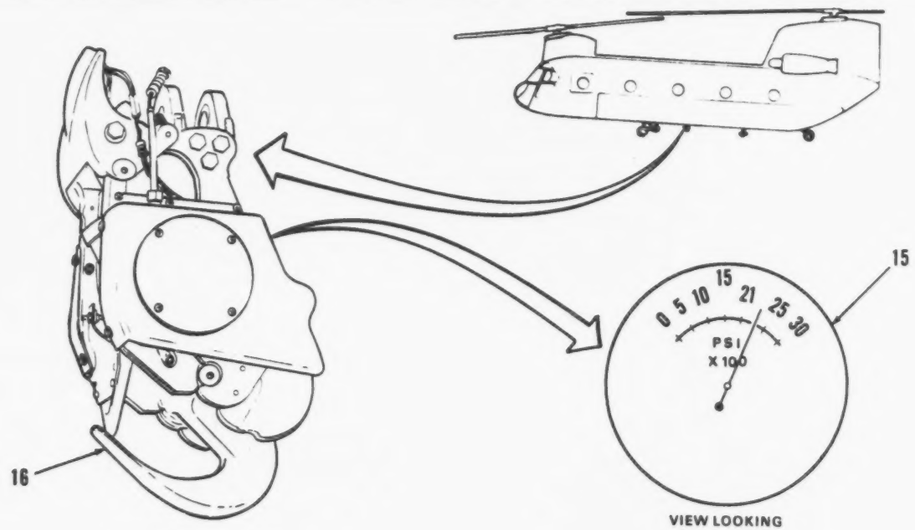
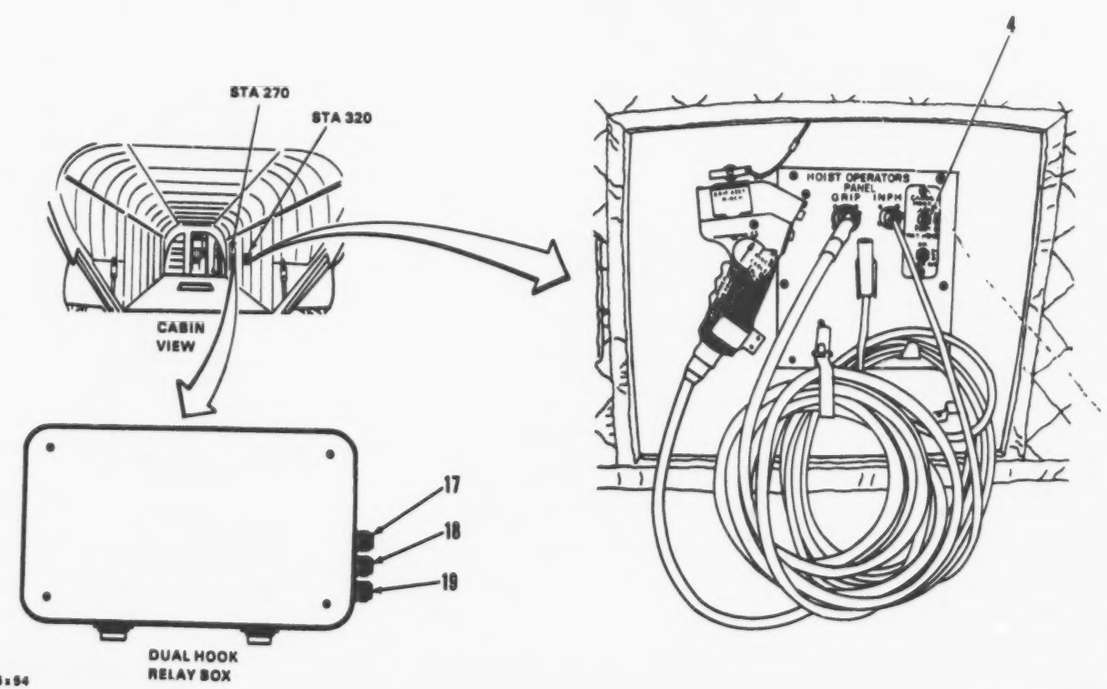
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)





TASK	RESULT
10. **Check FWD HOOK OPEN, MID HOOK OPEN, AFT HOOK OPEN, and DUAL HOOK FAULT capsules (11, 12, 13, and 14).**	If FWD HOOK OPEN capsule (11) is lit, go to task 16-1.11. If MID HOOK OPEN capsule (12) is lit, go to task 16-1.12. If AFT HOOK OPEN capsule (13) is lit, go to task 16-1.13. If DUAL HOOK FAULT capsule (14) is lit, go to task 16-1.14.
11. **Check center cargo hook gage (15).** **WARNING** **If gage indication is below 2000 psi, inadvertent cargo hook operation could occur resulting in loss of external load. Injury or death can occur to personnel.**	Gage shall indicate at least 2000 psi. If it does not, service center cargo hook actuator (TM 55-1520-240-23).
12. **Press down on hook (16) on center cargo hook.** Use wood plank. **WARNING** **If a status light is on, it indicates that a first failure has occured in one of the redundant protective circuits. A second failure while the system is in this condition can result in loss of external loads, resulting in personnel injury or death.**	Hook (16) on center cargo hook shall not move to open position. If it does, replace center cargo hook.
13. **Check ARMED SW FAIL status light (17).**	Light (17) shall be out. If it is on, replace HOIST/ CARGO HOOK panel.
14. **Press and release ARMED SW FAIL, RELEASE SW FAIL, and GROUND RELAY ACTIVATE lights (17, 18 and 19).**	Lights (17, 18 and 19) shall come on when pressed and go out when released. If any light does not come on, go to task 16-1.15.

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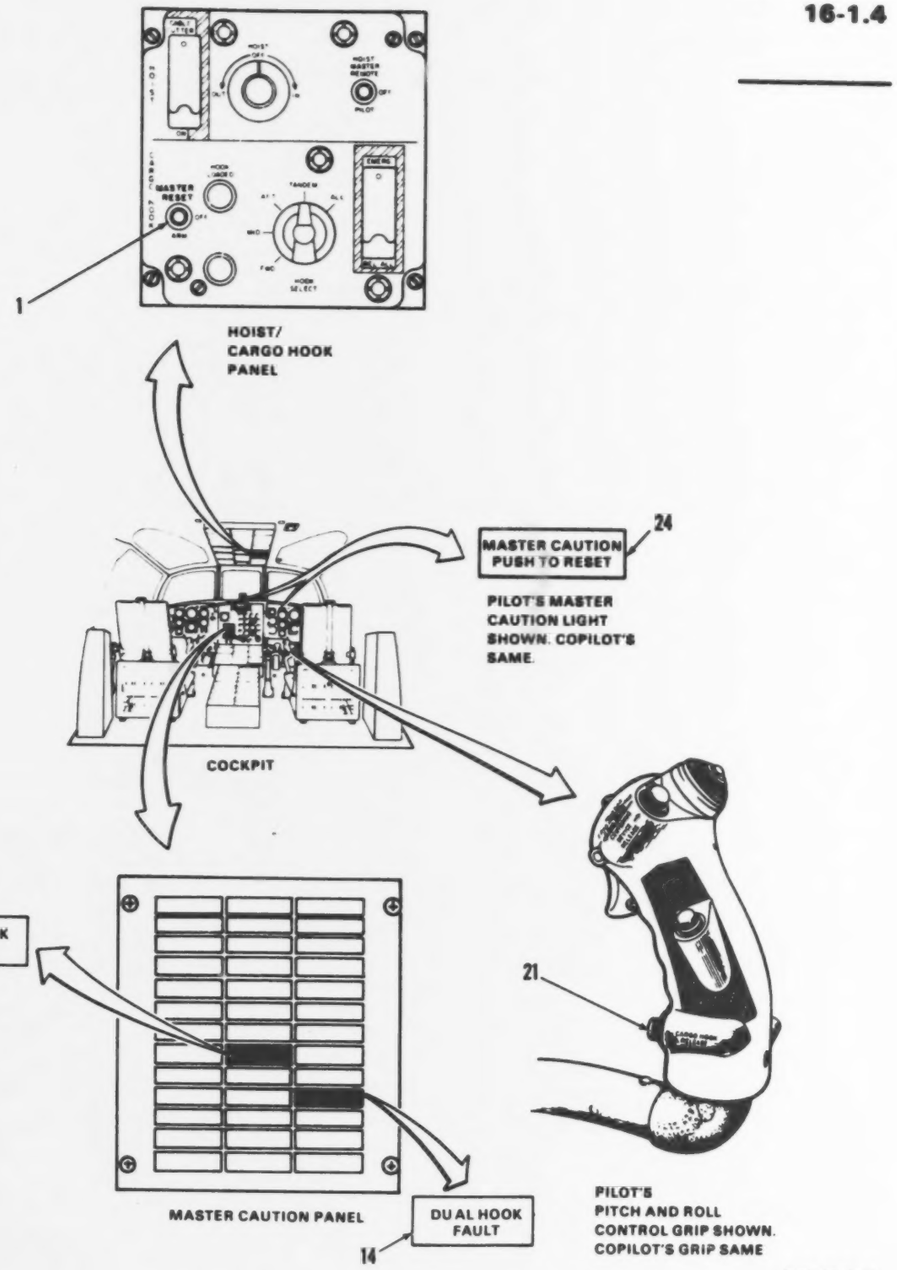
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
15. **Disconnect forward cargo hook connector (20).**	DUAL HOOK FAULT capsule (14) shall come on. If it does not, go to task 16-1.16.
16. **Set MASTER switch (1) to ARM.**	ARMED SW FAIL light (17) shall come on. If it does not, go to task 16-1.17.
17. **Press and release pilot's CARGO HOOK RELEASE switch (21).**	RELEASE SW FAIL light (18) shall momentarily come on. GROUND RELAY ACTIVATE light (19) shall come on and stay on. If either or both lights do not come on, go to task 16-1.18.
18. **Set MASTER switch (1) to OFF and then back to ARM.**	ARMED SW FAIL light (17) shall go out and come back on. GROUND RELAY ACTIVATE light (19) shall go out. If both lights stay on, replace HOIST/ CARGO HOOK Panel.
19. **Press and release CARGO HOOK RELEASE switch (21) on copilot's pitch and roll control grip.**	RELEASE SW FAIL light (18) shall momentarily come on. GROUND RELAY ACTIVATE light (19) shall come on and stay on. If either light does not come on, go to task 16-1.19.
20. **Repeat step 18,** then go to step 21.	
21. **Press and release CARGO HOOK RELEASE switch (22).**	RELEASE SW FAIL light (18) and GROUND RELAY ACTIVATE light (19) shall stay out. If either light comes on, replace CARGO HOOK switch (4).
22. **Set CARGO HOOK switch (4) to ARM.**	
23. **Press and release CARGO HOOK RELEASE switch (22).**	RELEASE SW FAIL light (18) shall momentarily come on. GROUND RELAY ACTIVATE light (19) shall come on and stay on. If either light does not come on, go to task 16-1.20.
24. **Set CARGO HOOK switch (4) to RESET then to RMTE.**	GROUND RELAY ACTIVATE light (19) shall go out. If it does not, replace CARGO HOOK switch (4).



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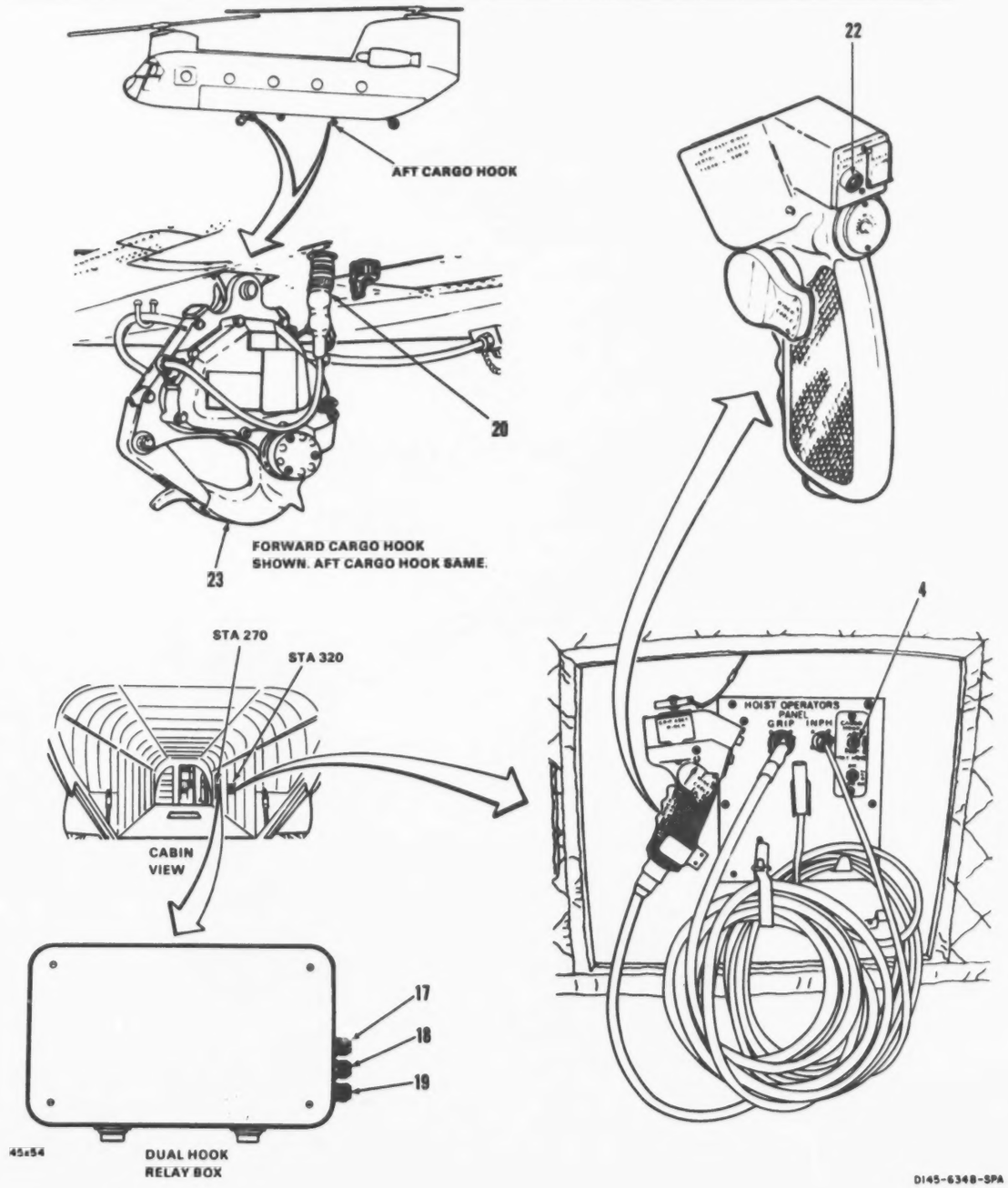
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)



TASK	RESULT
25. **Set MASTER switch (1) to RESET then to OFF.**	
26. **Connect forward cargo hook connector (20) to fuselage receptacle.**	DUAL HOOK FAULT capsule (14) shall go out.
27. **Disconnect aft cargo hook connector (20).**	DUAL HOOK FAULT capsule (14) shall come on. If it does not, replace emergency hook release relay box.
28. **Connect aft cargo hook connector (20) to fuselage receptacle.**	DUAL HOOK FAULT capsule (14) shall go out.
29. **Set MASTER switch (1) to ARM.**	
30. **Suspend one 20-25 pound load to each load beam (23) on forward and aft cargo hooks.**	
31. **Press and release pilot's CARGO HOOK RELEASE switch (21).** **NOTE** If CARGO HOOK RELEASE switch is held pressed, a hammering sound will be heard from forward cargo hook.	Forward cargo hook shall open and drop load then relatch closed. FWD HOOK OPEN capsule (11) shall come on. Pilot and copilot master caution lights (24) shall come on. If forward cargo hook does not open, go to task 16-1.21. If hook opens and FWD HOOK OPEN capsule does not come on, go to task 16 1.22.
32. **Set MASTER switch (1) to RESET, then to ARM.**	Forward cargo hook shall stay closed. FWD HOOK OPEN capsule (11) shall go out. Pilot and copilot master caution lights (24) shall go out. If capsule is still lit, go to task 16-1.11. If lights (24) are still lit, replace master caution panel.
33. **Suspend one 20-25 pound load to load beam (23) on forward cargo hook.**	

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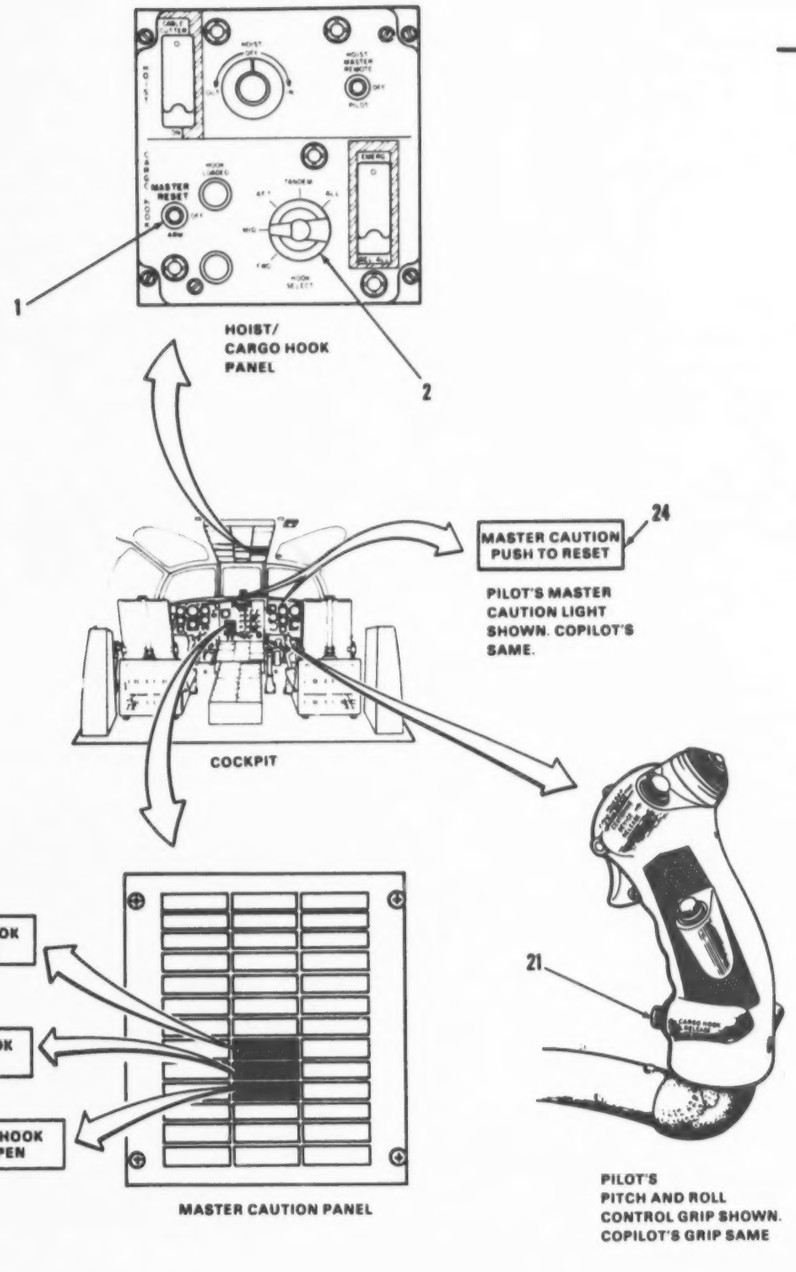
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
34. **Set HOOK SELECT switch (2) to MID.**	
35. **Press and release pilot's CARGO HOOK RELEASE switch (21).**	Center cargo hook shall open and remain open. MID HOOK OPEN capsule (12) shall come on. Pilot and copilot master caution lights (24) shall come on. If center cargo hook does not open, go to task 16-1.23. If hook opens and MID HOOK OPEN capsule does not come on, go to task 16-1.24.
36. **Set MASTER switch (1) to RESET then to ARM.**	Center cargo hook shall close and remain closed. MID HOOK OPEN capsule (12) shall go out. Pilot and copilot master caution lights (24) shall go out. If center cargo hook does not close, replace it. If capsule is still lit when center cargo hook closed, go to task 16-1.12.
37. **Set HOOK SELECT switch (2) to AFT.**	
38. **Press and release pilot's CARGO HOOK RELEASE switch (21).**	Aft cargo hook shall open and drop load then relatch closed. AFT HOOK OPEN capsule (13) shall come on. Pilot and copilot master caution lights (24) shall come on. If aft cargo hook does not open, go to task 16-1.25. If hook opens and AFT HOOK OPEN capsule does not come on, go to task 16-1.26.
39. **Set MASTER switch (1) to RESET then to ARM.**	Aft cargo hook shall stay closed. AFT HOOK OPEN capsule (13) shall go out. Pilot and copilot master caution lights (24) shall go out. If capsule is still lit, go to task 16-1.13.



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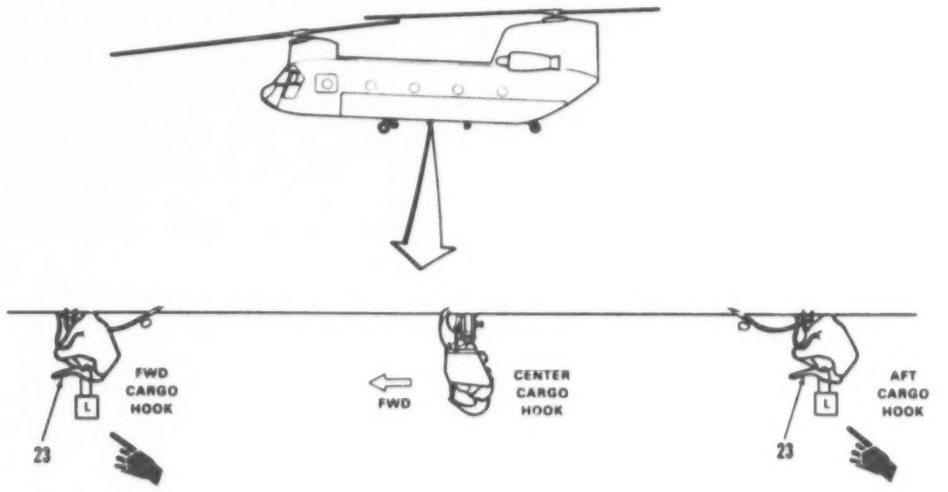
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
40. **Suspend 20-25 pound load to load beam (23) on aft cargo hook.**	
41. **Set HOOK SELECT switch (2) to TANDEM.**	
42. **Press and release pilot's CARGO HOOK RELEASE switch (21).**	Forward and aft cargo hooks shall open and drop loads then relatch closed. FWD HOOK OPEN and AFT HOOK OPEN capsules (11 and 13) shall come on. Pilot and copilot master caution lights (24) shall come on. If both hooks do not open, replace HOIST/CARGO HOOK panel.
43. **Set CARGO HOOK switch (4) to RESET and then to RMTE.**	Forward and aft cargo hooks shall stay closed. FWD HOOK OPEN and AFT HOOK OPEN capsules (11 and 13) shall go out. If capsules are still on, replace CARGO HOOK switch (4).
44. **Suspend one 20-25 pound load to each load beam (23) on forward and aft cargo hooks.**	
45. **Set HOOK SELECT switch (2) to ALL.**	
46. **Press and release pilot CARGO HOOK RELEASE switch (21).**	Forward and aft cargo hooks shall open and drop loads then relatch closed. Center cargo hook shall open and stay open. FWD HOOK OPEN, AFT HOOK OPEN, and MID HOOK OPEN capsules (11, 12 and 13) shall come on. Pilot and copilot master caution lights (24) shall come on. If all hooks do not open, replace HOIST/CARGO HOOK panel.

NOTE

It is normal for MID HOOK OPEN capsule to come on at 2 to 3 seconds after FWD and AFT HOOK OPEN capsules come on.



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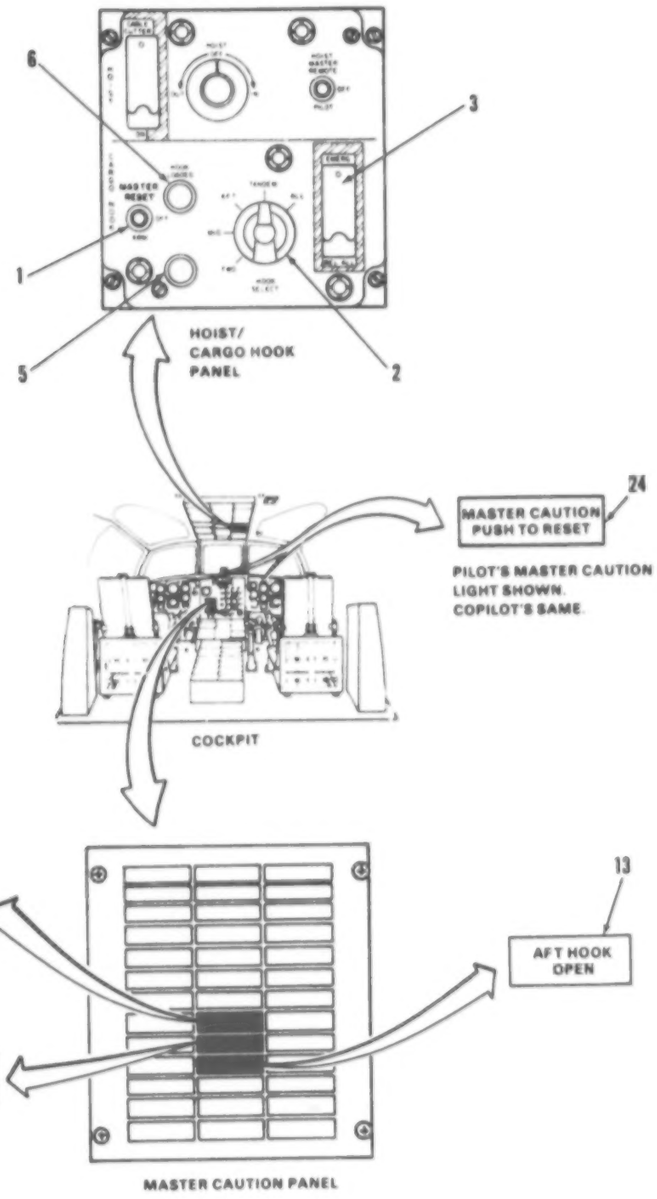
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
47. **Set MASTER switch (1) to RESET, then to OFF.**	Forward and aft cargo hooks shall remain closed. Center cargo hook shall close and remain closed. FWD HOOK OPEN, MID HOOK OPEN, and AFT HOOK OPEN capsules (11, 12 and 13) shall go out. Pilot and copilot master caution lights (24) shall go out.
48. **Suspend one 20-25 pound load to each load beam (23) on forward and aft cargo hooks.**	
49. **Check center cargo hook gage (15).** **WARNING** • **If gage indication is below 2000 psi, inadvertent cargo hook operation could occur resulting in loss of external load. Injury or death to personnel can occur.** • **Do not stand near center cargo hook when EMERG switch is set to REL ALL. High-pressure air, possibly mixed with oil, will be vented from cargo hook. Injury to personnel can occur.**	Gage (15) shall indicate at least 2000 psi. If it does not, service center cargo hook actuator (TM 55-1520-240-23).
50. **Lift switchguard over EMERG switch (3). Momentarily set EMERG switch to REL ALL.**	All cargo hooks shall open and following shall occur for 10 to 14 seconds: Forward and aft cargo hook load beams (23) shall open, drop loads and then close, center cargo hook shall remain open; FWD HOOK OPEN, MID HOOK OPEN, and AFT HOOK OPEN capsules (11, 12 and 13) shall come on and pilot and copilot master caution lights (24) shall come on. Center cargo hook shall close after 10 to 14 seconds. All capsules (11, 12, and 13) and lights (24) shall go out. If any cargo hook does not open, go to task 16-1.27. If center cargo hook opens but does not stay open for 10 to 14 seconds, go to task 16-1.28.
51. **Close switchguard over EMERG switch (3).**	
52. Without 35 service center cargo hook actuator (TM 55-1520-240-23). **Suspend 20-25 pound load to tongue (16) on center cargo hook.**	



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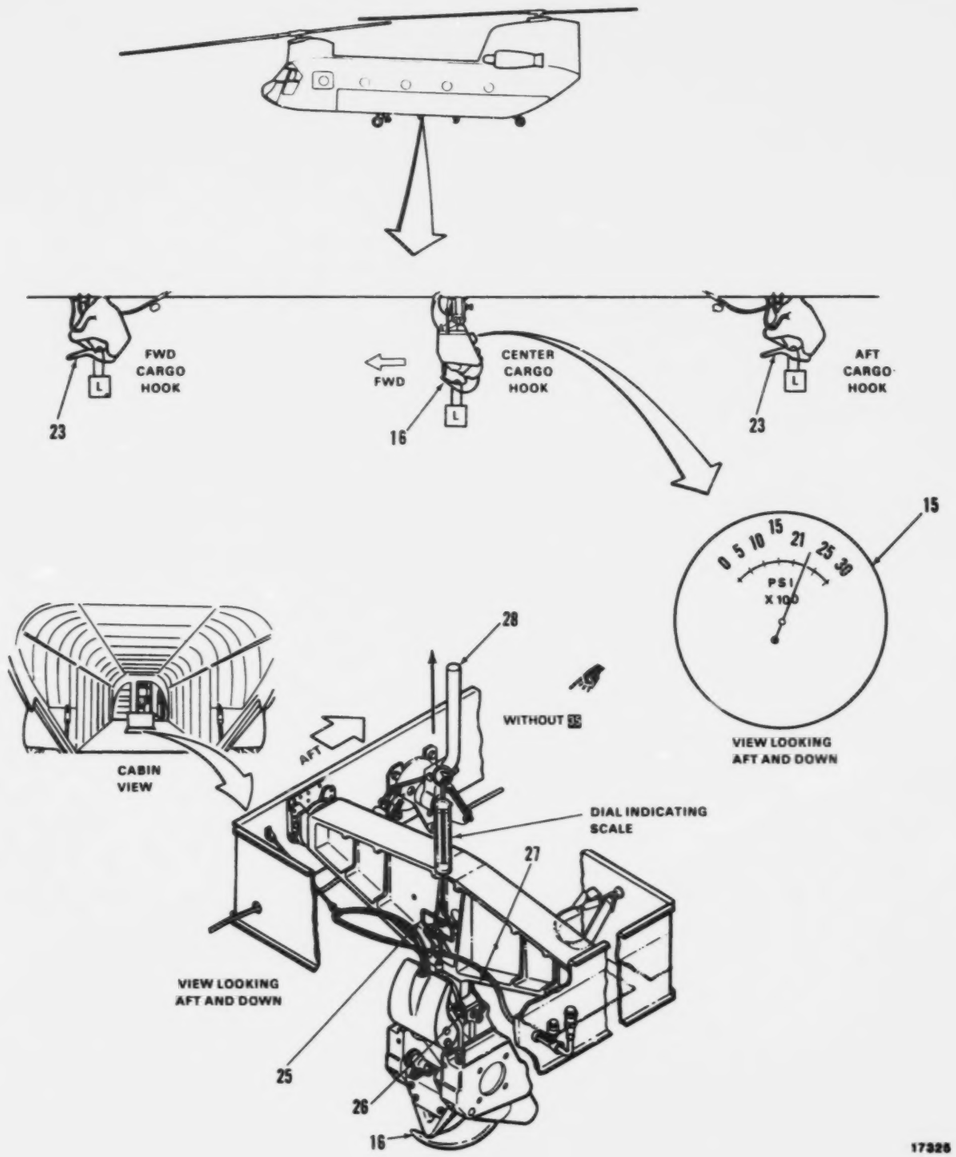
TASK	RESULT
CAUTION **When manual release has been pulled, do not press any CARGO HOOK RELEASE switch or EMERG switch. Damage to cargo hook can occur.**	
53. **Without 35 connect dial indicating scale to center cargo hook manual release handle (26). Pull up dial indicating scale.**	Center cargo hook shall open and drop load. Dial indicating scale shall indicate less than 20 pounds when center cargo hook opens. MID HOOK OPEN capsule (12) and both master caution lights (24) shall come on. If hook does not open or dial indicating scale reads more than 20 pounds before hook opens, go to task 16-1.29. If MID HOOK OPEN capsule (12) does not come on, go to task 16-1.24.



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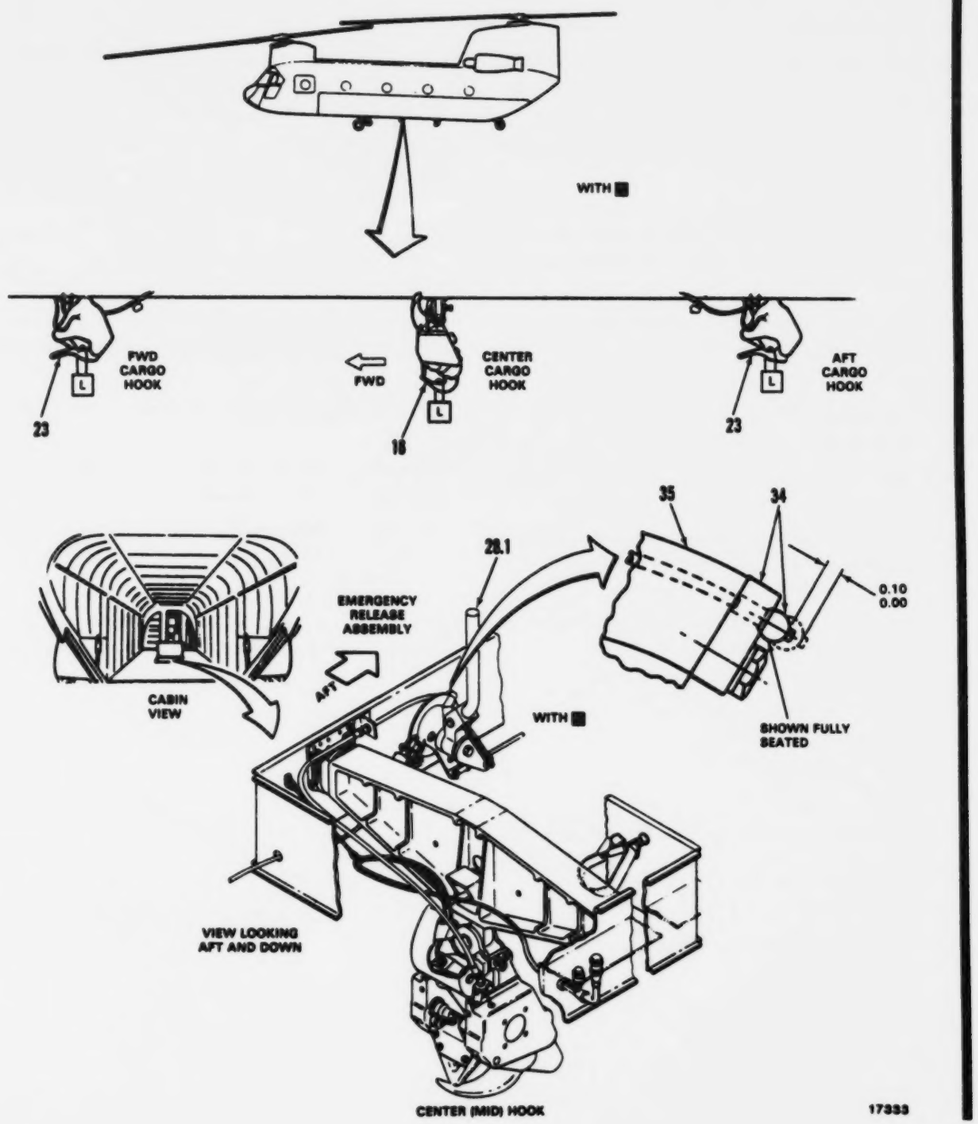
TASK	RESULT
54. **Remove dial indicating scale. Manually relatch center cargo hook** (TM 55-1520-240-23).	MID HOOK OPEN capsule (12) and both master caution lights (24) shall go out.
55. **Press down on hook (16) of center cargo hook.** Use wood plank.	Center cargo hook shall not open. If it does, manually relatch center cargo hook (TM 55-1520-240-23), and repeat step 55. If hook opens again, replace center cargo hook.
56. **Swing center cargo hook right until pivot block (26) contacts beam (27) and pull on hook (16).**	Center cargo hook shall not open. If it does, check rigging of manual release mechanism (TM 55-1520-240-23). Repeat step 56.
57. **Repeat step 56 to the left.** Then go to step 58.	
58. **Without 35 pull tandem hook release lever (28) aft then to vertical position.**	Forward and aft cargo hooks shall open and latch closed. FWD HOOK OPEN and AFT HOOK OPEN capsules (11 and 13) and master caution lights (24) shall come on. If either or both hooks do not open, go to task 16-1.29.
59. **Push lever (28) forward to stowed position.**	

CAUTION

When manual release has been pulled, do not press any CARGO HOOK RELEASE switch or EMERG switch. Damage to cargo hook can occur.

59.1. **With 35 suspend a weight of 20-25 pounds from the forward and aft cargo hooks (23). Suspend a weight of 45 to 50 pounds from the center cargo hook (16).**	
59.2. **Pull the triple hook manual release lever aft** then back to the vertical position.	The forward, center, and aft cargo hooks shall open and drop loads. The forward and aft hook shall latch closed. FWD HOOK OPEN, MID HOOK OPEN, and AFT HOOK OPEN capsules (11, 12, and 13) and MASTER CAUTION lights (24) shall come on. If a cargo hook (or hooks) fails to open, go to task 16-1.29.
59.3. **Push lever (28.1) forward** to stowed position.	



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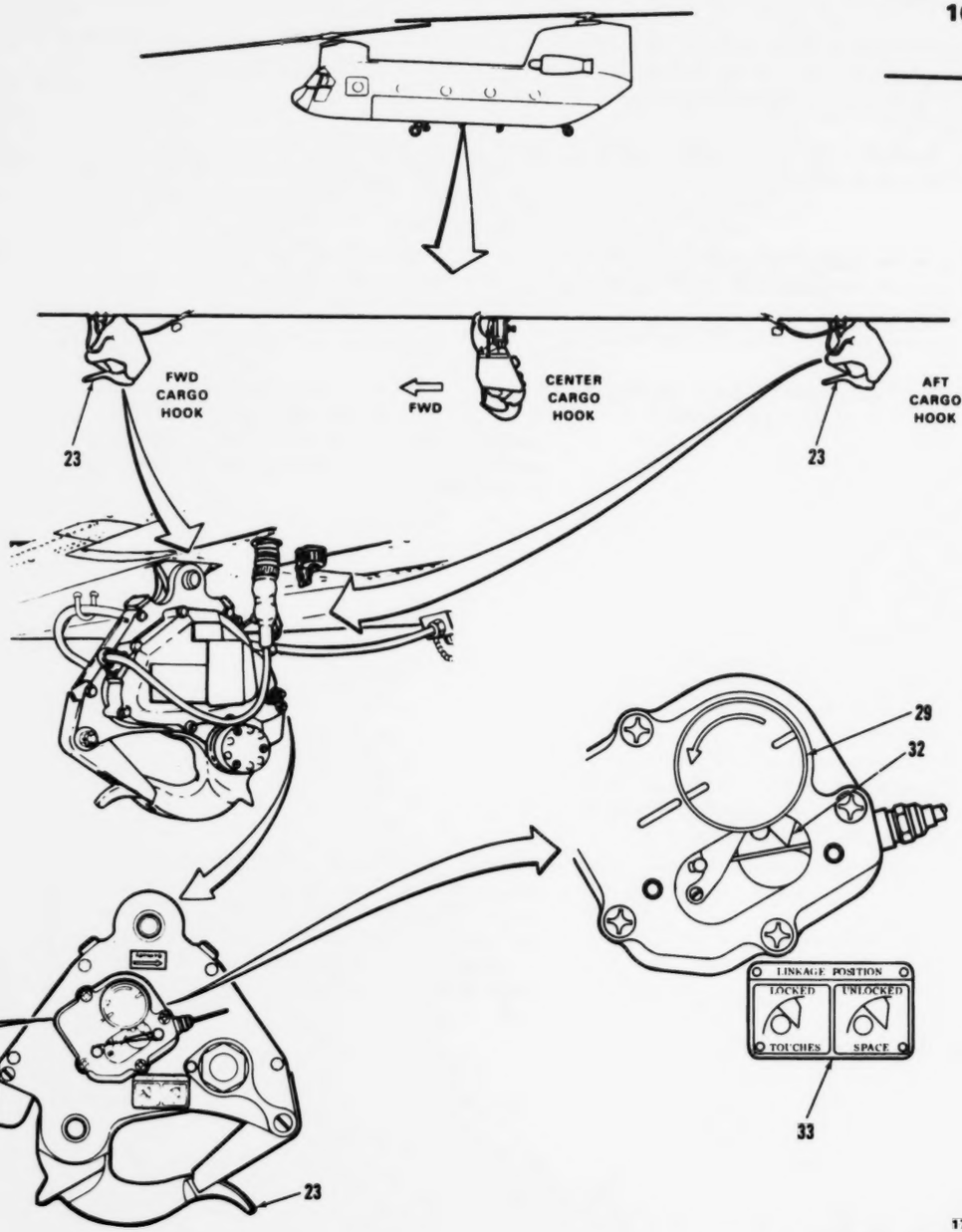
16-1.4 EXTERNAL CARGO HOOK SYSTEM OPERATIONAL CHECK (Continued)

60. **Pull down on forward and aft cargo hook load beams (23).**	Both hooks shall remain closed. If a hook opens, pull load beam (23) to full open position and release it. Hook should then relatch.
61. **Set MASTER switch (1) to RESET, then to OFF.**	Capsules (11 and 13) and master caution lights (24) shall go out. Forward and aft cargo hooks shall remain closed.
62. **Turn forward cargo hook manual release (29) counterclockwise. Pull down and hold open load beam (23).**	FWD HOOK OPEN capsule (11) and both master caution lights (24) shall come on.
63. **Slowly move forward cargo hook load beam (23) up towards closed position.**	FWD HOOK LOADED light (5) shall flash on just before hook is fully closed. If it does not, go to task 16-1.30.
64. **Manually relatch forward cargo hook. Pull down on load beam (23).**	Forward cargo hook shall not open. If it does, relatch it.
65. **Set MASTER switch (1) to RESET, then to OFF.**	FWD HOOK OPEN capsule (11) and master caution lights (24) shall go out.
66. **Turn aft cargo hook manual release (29) counterclockwise. Pull down and hold open load beam (23).**	AFT HOOK OPEN capsule (13) and both master caution lights (24) shall come on.
67. **Slowly move aft cargo hook load beam (23) up towards closed position.**	AFT HOOK LOADED light (6) shall flash on just before hook is fully closed. If it does not, go to task 16-1.30.



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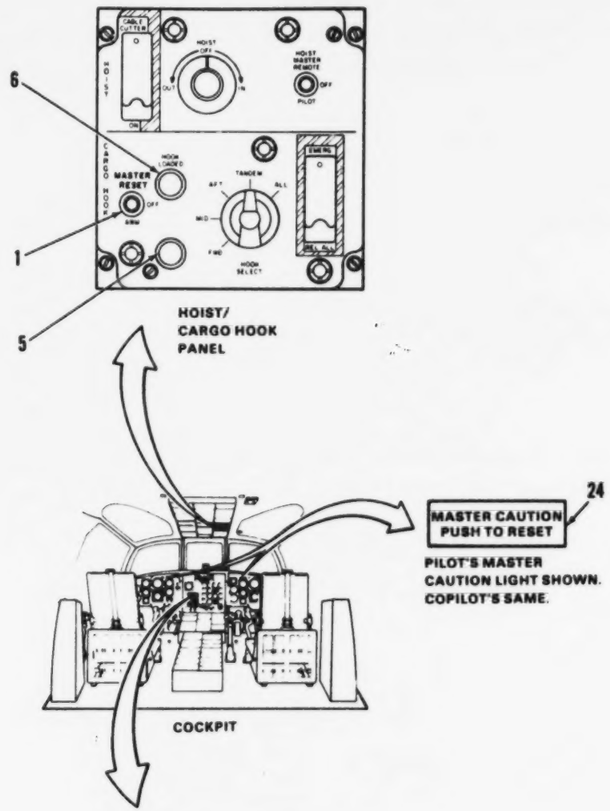
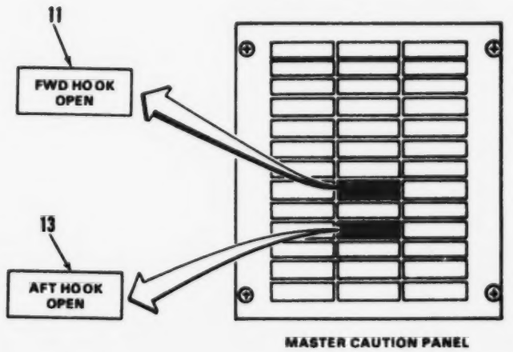
TASK	RESULT
68. **Manually relatch aft cargo hook. Pull down on load beam (23).**	Aft cargo hook shall not open.
69. **Set MASTER switch (1) to RESET, then to OFF.**	AFT HOOK OPEN capsule (13) and master caution lights (24) shall go out.
70. **Suspend one 20-25 pound to each load beam (23) on forward and aft cargo hooks.**	
71. **Turn manual release (29) counterclockwise on forward and aft cargo hooks and release it.**	Each cargo hook shall open and drop load when its release (29) is turned and relatch closed. If load is not released, replace cargo hook.
72. **Manually move forward cargo hook full forward. Visually check clearance between cable ball end (30) and arm (31). Move cargo hook full aft. Visually check clearance between cable ball end and arm. Release cargo hook.**	Clearance between cable ball end (30) and arm (31) shall be 0 to 3/16 inch. If it is not, adjust clearance (TM 55-1520-240-23).
WARNING **Failure to perform following step can result in loss of external loads when lateral sway occurs resulting in personnel injury or death.**	
73. **Attach 15-foot rope to forward cargo hook load beam (23). Pull hook full left, then full right. Visually check clearance between cable ball and arm at both extremes. Use inspection mirror. Remove rope.**	Forward cargo hook shall not open. If it does, check tandem hook release rigging. Adjust as required (TM 55-1520-240-23). Clearance between cable ball end (30) and arm (31) shall be 0 to 3/16 inch. If it is not, adjust clearance (TM 55-1520-240-23).
74. Visually check position of linkage (32), and compare it with placard (33).	If linkage position is UNLOCKED, replace cargo hook.
75. **Repeat steps 71 through 74 on aft cargo hook.**	
76. With 35 visually check clearance between center cargo hook control cable ball end and quadrant.	Clearance between cable ball end (34) and quadrant (35) shall be 0 to 3/32 inch. If it is not, adjust clearance (TM 55-1520-240-23).

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery disconnected.
Electrical power off.
Hydraulic power off.
Center cargo hook serviced.
Center cargo hook stowed.
Center cargo hook access panel closed.





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16-1.5 FWD OR AFT HOOK LOADED LIGHT IS LIT WHEN CARGO HOOK IS UNLOADED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

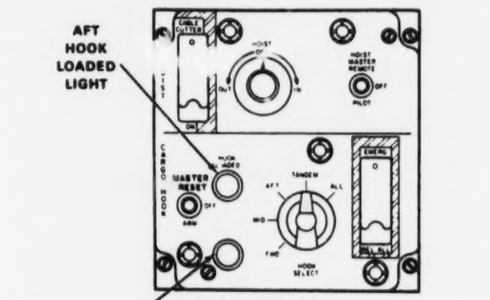
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

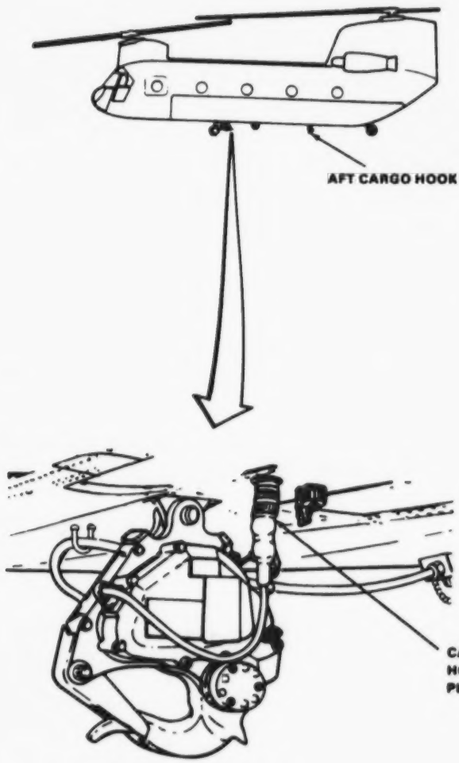
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





FORWARD CARGO HOOK.
AFT CARGO HOOK SAME

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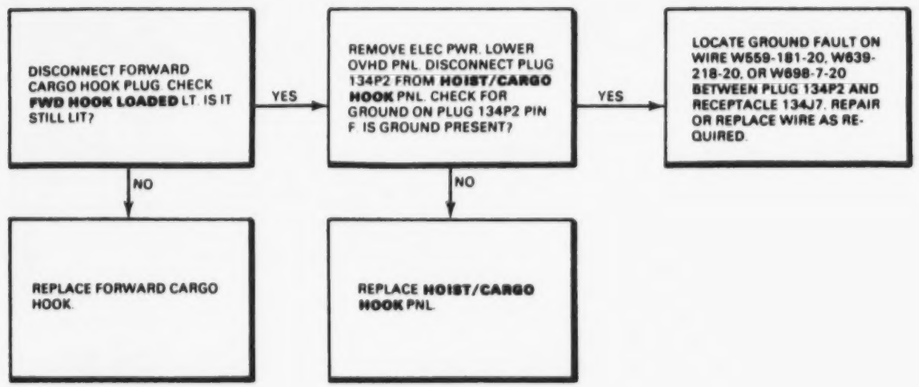
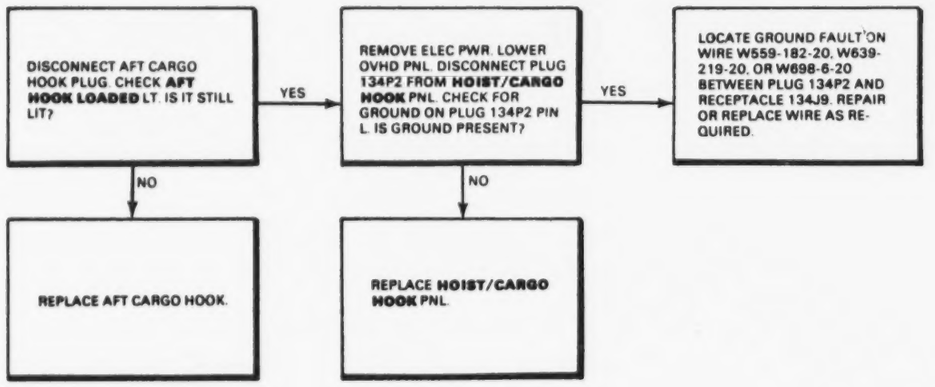
16-1.5 FWD OR AFT HOOK LOADED LIGHT IS LIT WHEN CARGO HOOK IS UNLOADED (Continued)

FWD HOOK LOADED LIGHT IS LIT WHEN CARGO HOOK IS UNLOADED


DISCONNECT FORWARD CARGO HOOK PLUG. CHECK **FWD HOOK LOADED** LT. IS IT STILL LIT?
YES
REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM **HOIST/CARGO HOOK** PNL. CHECK FOR GROUND ON PLUG 134P2 PIN F. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-181-20, W639-218-20, OR W698-7-20 BETWEEN PLUG 134P2 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE FORWARD CARGO HOOK.
NO
REPLACE **HOIST/CARGO HOOK** PNL.

AFT HOOK LOADED LIGHT IS LIT WHEN CARGO HOOK IS UNLOADED


DISCONNECT AFT CARGO HOOK PLUG. CHECK **AFT HOOK LOADED** LT. IS IT STILL LIT?
YES
REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM **HOIST/CARGO HOOK** PNL. CHECK FOR GROUND ON PLUG 134P2 PIN L. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-182-20, W639-219-20, OR W698-6-20 BETWEEN PLUG 134P2 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE AFT CARGO HOOK.
NO
REPLACE **HOIST/CARGO HOOK** PNL.

END OF TASK

16-1.6 FWD OR AFT HOOK LOADED LIGHT DOES NOT COME ON WHEN PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

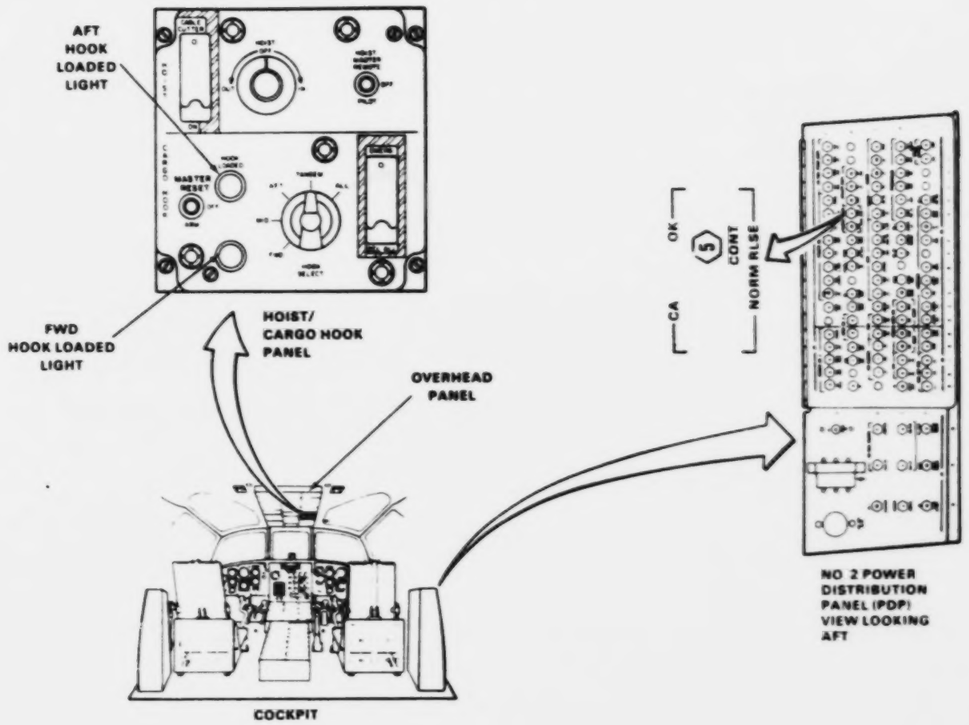
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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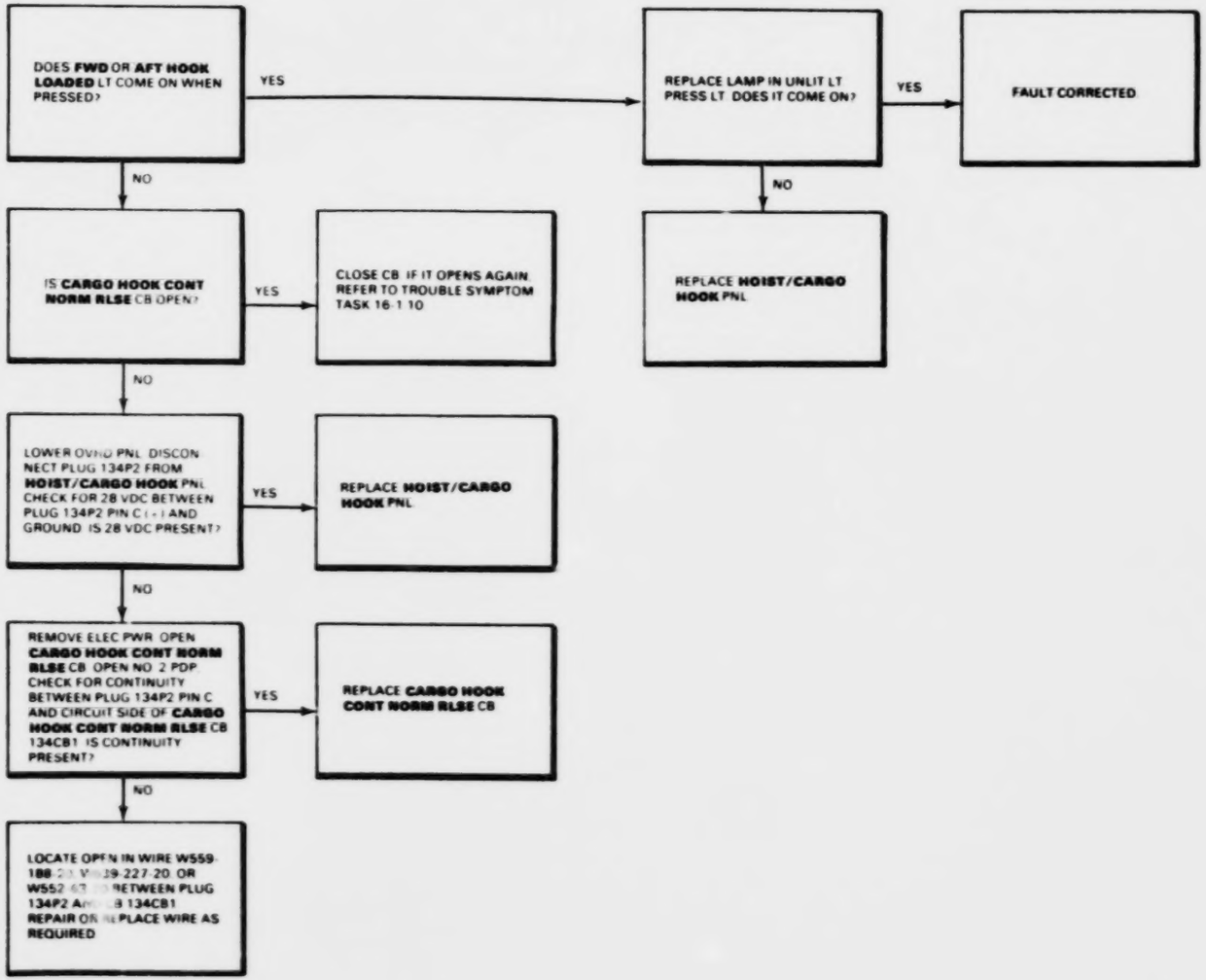
16-1.6 FWD OR AFT HOOK LOADED LIGHT DOES NOT COME ON WHEN PRESSED (Continued)


DOES FWD OR AFT HOOK LOADED LT COME ON WHEN PRESSED?
YES
REPLACE LAMP IN UNLIT LT PRESS LT DOES IT COME ON?
YES
FAULT CORRECTED
NO
NO
IS CARGO HOOK CONT NORM RLSE CB OPEN?
YES
CLOSE CB IF IT OPENS AGAIN REFER TO TROUBLE SYMPTOM TASK 16-1 10
REPLACE HOIST/CARGO HOOK PNL
NO
LOWER OVHD PNL DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL CHECK FOR 28 VDC BETWEEN PLUG 134P2 PIN C (+) AND GROUND IS 28 VDC PRESENT?
YES
REPLACE HOIST/CARGO HOOK PNL
NO
REMOVE ELEC PWR OPEN CARGO HOOK CONT NORM RLSE CB OPEN NO 2 PDP CHECK FOR CONTINUITY BETWEEN PLUG 134P2 PIN C AND CIRCUIT SIDE OF CARGO HOOK CONT NORM RLSE CB 134CB1 IS CONTINUITY PRESENT?
YES
REPLACE CARGO HOOK CONT NORM RLSE CB
NO
LOCATE OPEN IN WIRE W559-188-20 W559-227-20 OR W552-67-20 BETWEEN PLUG 134P2 AND CB 134CB1 REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

16-1.7 CARGO HOOK PWR EMER REL CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

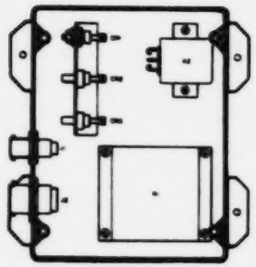
Tools:
Electrical Repairer's Tool Kit.
NSN 5180-00-323-4915
Multimeter

Materials:
None

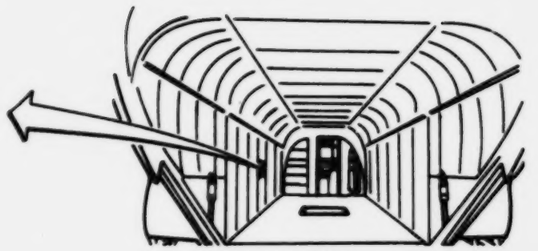
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

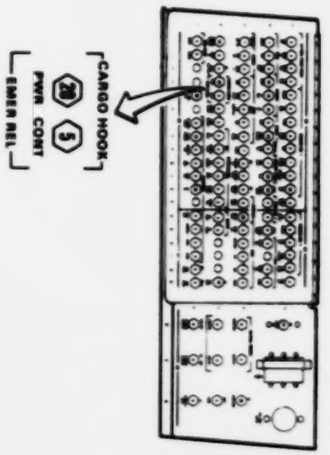
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



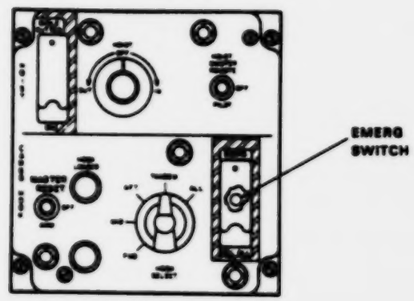
EMERGENCY HOOK RELEASE RELAY BOX STA 270

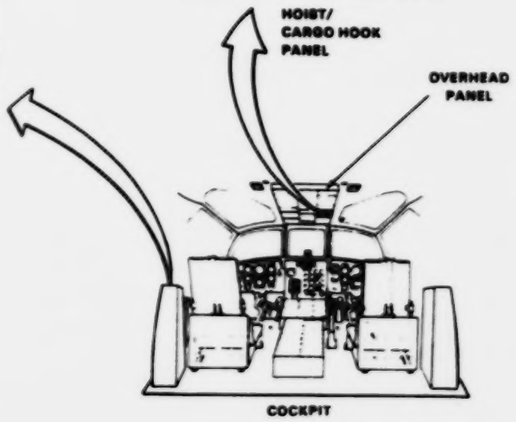


CABIN VIEW

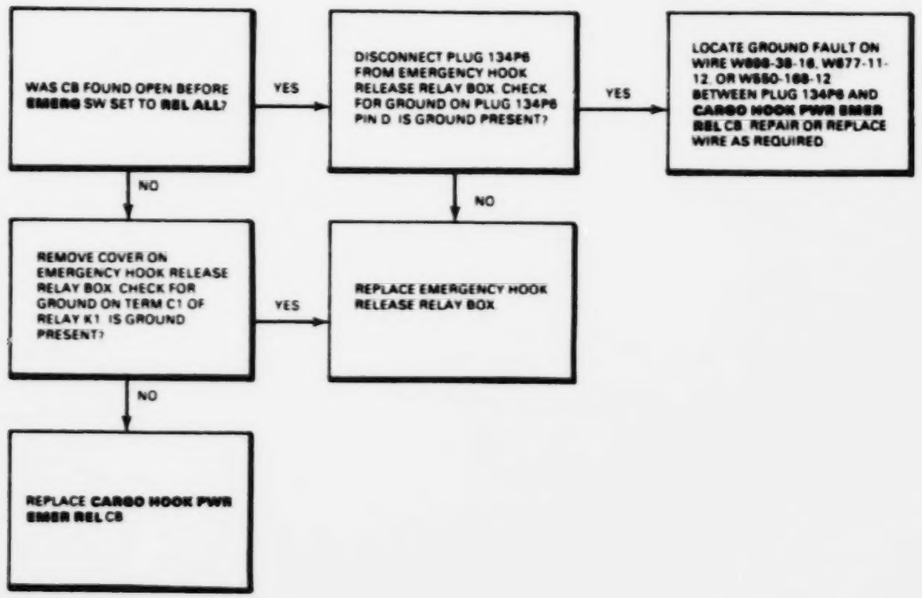


NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT





COCKPIT


WAS CB FOUND OPEN BEFORE EMERG SW SET TO REL ALL?
YES
DISCONNECT PLUG 134P6 FROM EMERGENCY HOOK RELEASE RELAY BOX. CHECK FOR GROUND ON PLUG 134P6 PIN D. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W888-38-16, W877-11-12, OR W550-168-12 BETWEEN PLUG 134P6 AND CARGO HOOK PWR EMER REL CB. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
REMOVE COVER ON EMERGENCY HOOK RELEASE RELAY BOX. CHECK FOR GROUND ON TERM C1 OF RELAY K1. IS GROUND PRESENT?
YES
REPLACE EMERGENCY HOOK RELEASE RELAY BOX
NO
REPLACE CARGO HOOK PWR EMER REL CB

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END OF TASK

16-1.8 CARGO HOOK CONT EMER REL CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

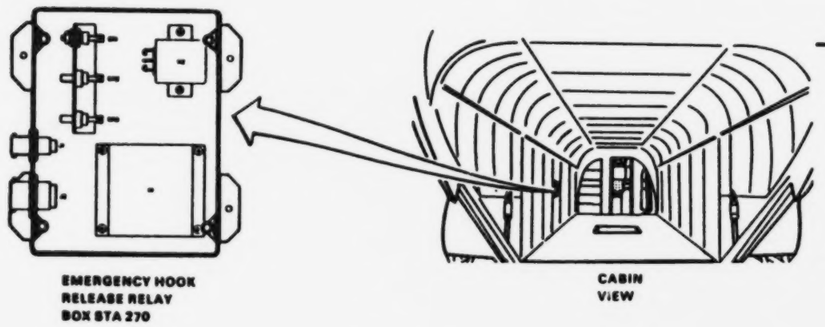
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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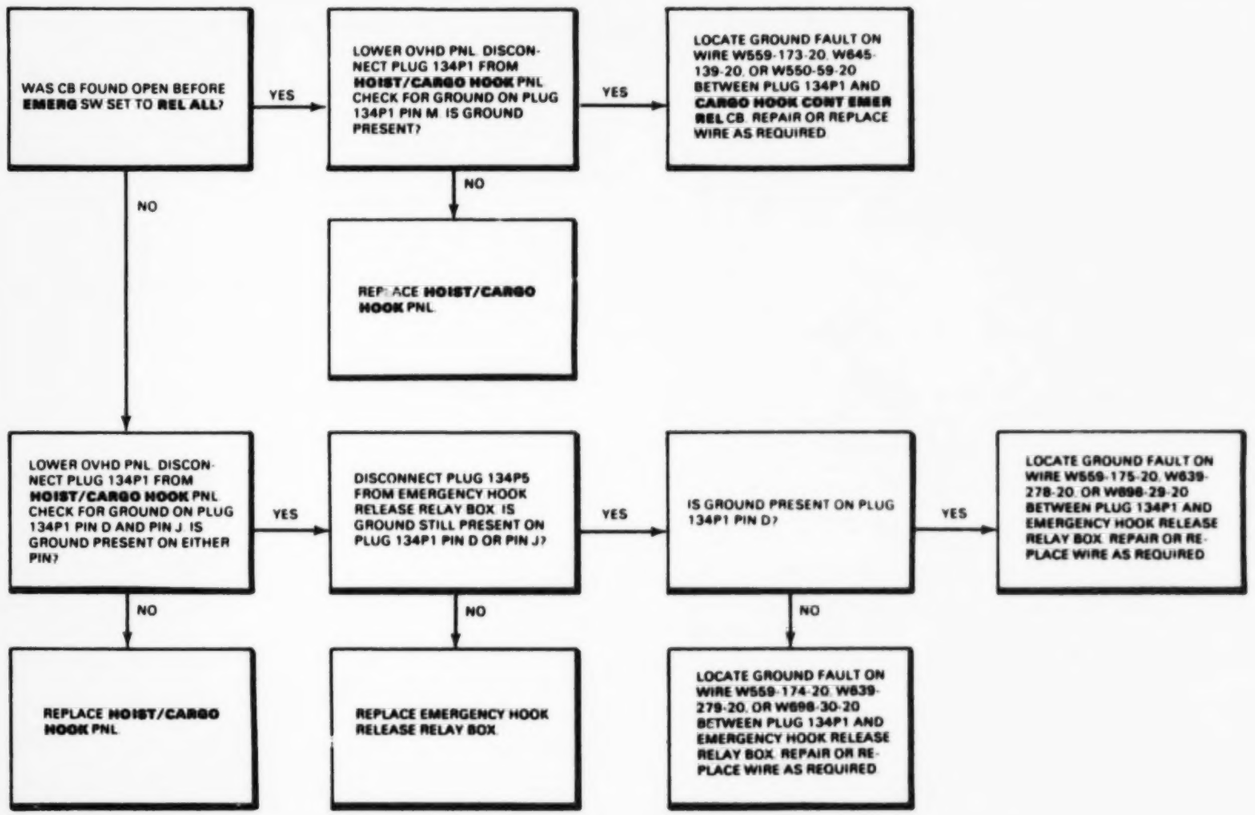
16-1.8 CARGO HOOK CONT EMER REL CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CB FOUND OPEN BEFORE EMERG SW SET TO REL ALL?
YES
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P1 PIN M. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-173-20, W645-139-20, OR W550-59-20 BETWEEN PLUG 134P1 AND CARGO HOOK CONT EMER REL CB. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P1 PIN D AND PIN J. IS GROUND PRESENT ON EITHER PIN?
YES
DISCONNECT PLUG 134P5 FROM EMERGENCY HOOK RELEASE RELAY BOX. IS GROUND STILL PRESENT ON PLUG 134P1 PIN D OR PIN J?
YES
IS GROUND PRESENT ON PLUG 134P1 PIN D?
YES
LOCATE GROUND FAULT ON WIRE W559-175-20, W639-278-20, OR W898-29-20 BETWEEN PLUG 134P1 AND EMERGENCY HOOK RELEASE RELAY BOX. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
REPLACE EMERGENCY HOOK RELEASE RELAY BOX.
NO
LOCATE GROUND FAULT ON WIRE W559-174-20, W639-279-20, OR W898-30-20 BETWEEN PLUG 134P1 AND EMERGENCY HOOK RELEASE RELAY BOX. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

16-1.9 CARGO HOOK PWR NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

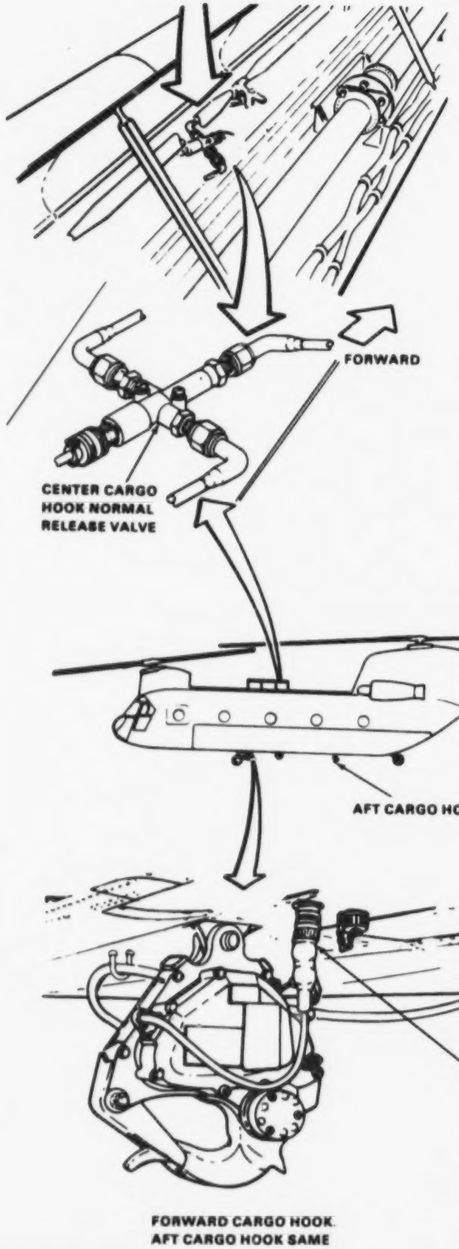
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

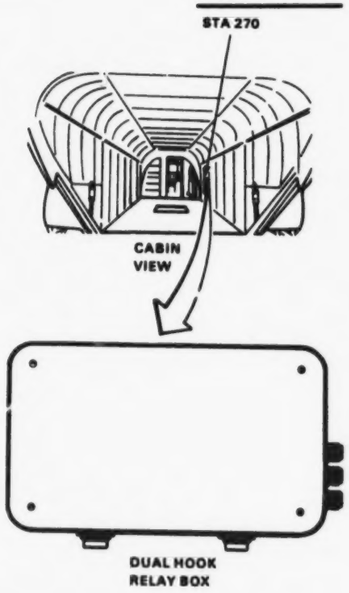
Materials:
None

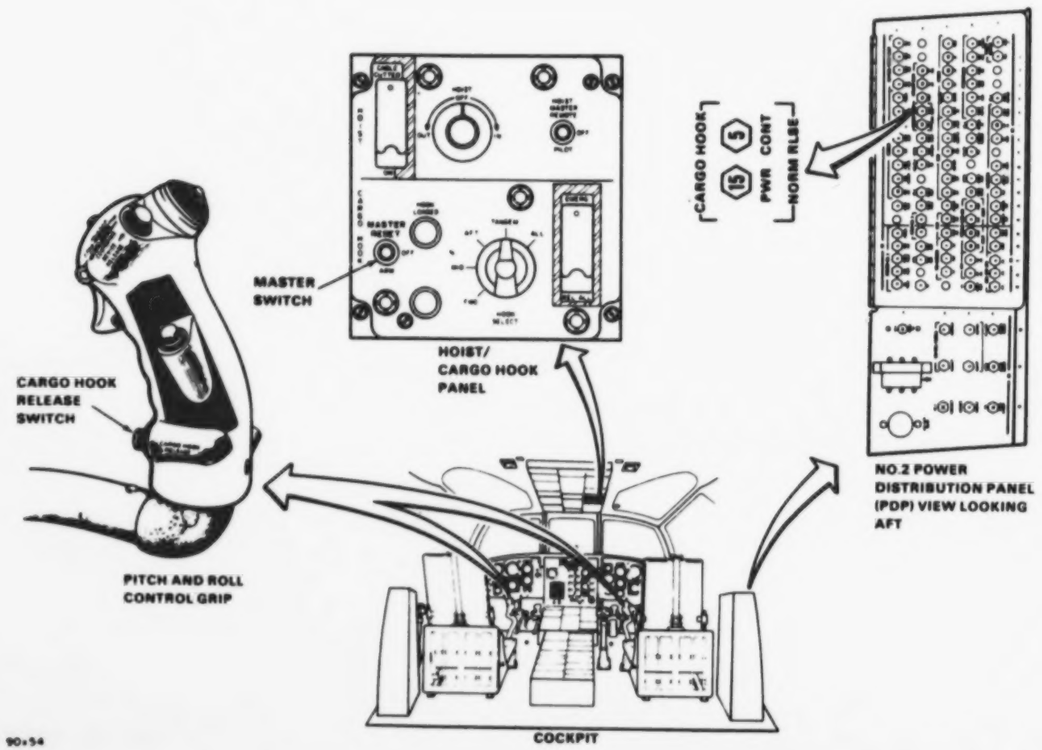
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Tunnel Access Doors Opened







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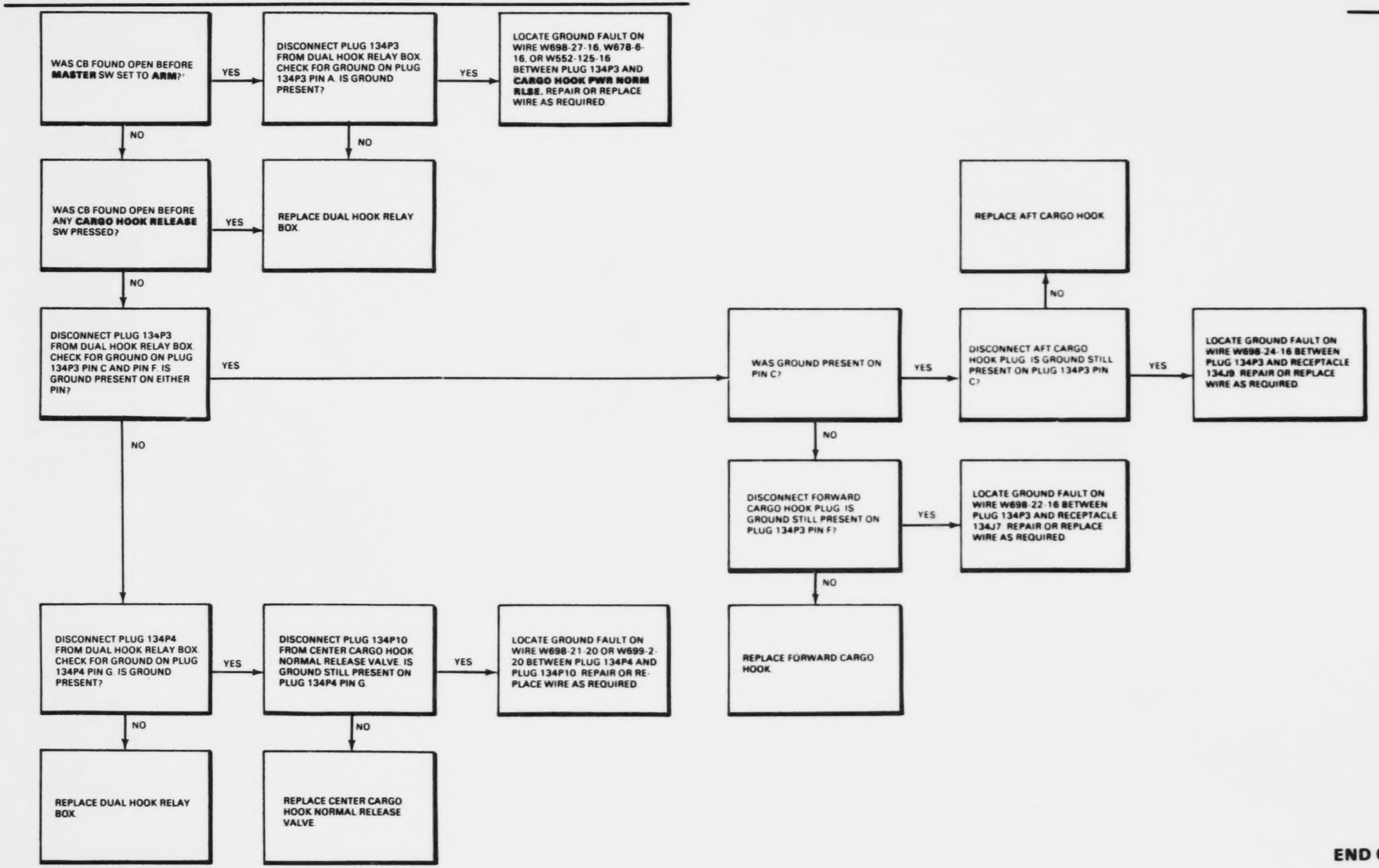
16-1.9 CARGO HOOK PWR NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


WAS CB FOUND OPEN BEFORE MASTER SW SET TO ARM?
YES
DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PLUG 134P3 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W698-27-16, W678-6-16, OR W552-125-16 BETWEEN PLUG 134P3 AND CARGO HOOK PWR NORM RLSE. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
WAS CB FOUND OPEN BEFORE ANY CARGO HOOK RELEASE SW PRESSED?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PLUG 134P3 PIN C AND PIN F. IS GROUND PRESENT ON EITHER PIN?
YES
WAS GROUND PRESENT ON PIN C?
YES
DISCONNECT AFT CARGO HOOK PLUG. IS GROUND STILL PRESENT ON PLUG 134P3 PIN C?
YES
LOCATE GROUND FAULT ON WIRE W698-24-16 BETWEEN PLUG 134P3 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE AFT CARGO HOOK
NO
NO
DISCONNECT FORWARD CARGO HOOK PLUG. IS GROUND STILL PRESENT ON PLUG 134P3 PIN F?
YES
LOCATE GROUND FAULT ON WIRE W698-22-16 BETWEEN PLUG 134P3 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE FORWARD CARGO HOOK
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PLUG 134P4 PIN G. IS GROUND PRESENT?
YES
DISCONNECT PLUG 134P10 FROM CENTER CARGO HOOK NORMAL RELEASE VALVE. IS GROUND STILL PRESENT ON PLUG 134P4 PIN G.
YES
LOCATE GROUND FAULT ON WIRE W698-21-20 OR W699-2-20 BETWEEN PLUG 134P4 AND PLUG 134P10. REPAIR OR REPLACE WIRE AS REQUIRED
NO
NO
REPLACE DUAL HOOK RELAY BOX.
REPLACE CENTER CARGO HOOK NORMAL RELEASE VALVE.

END OF TASK

16-1.10 CARGO HOOK CONT NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

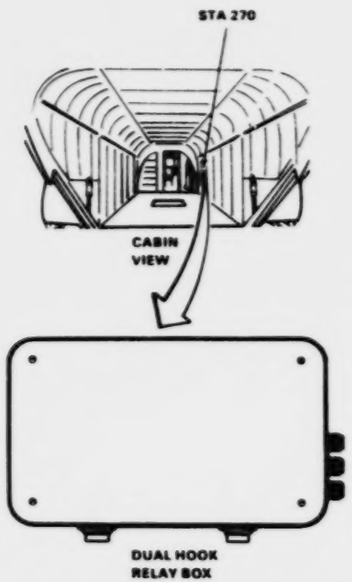
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

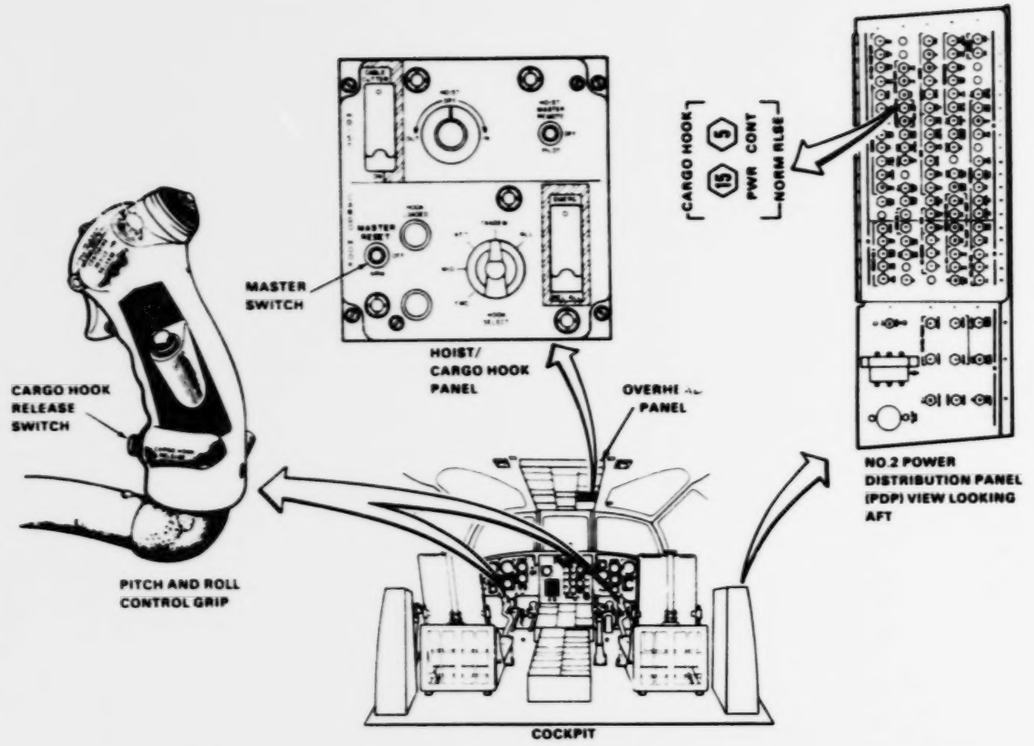
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off





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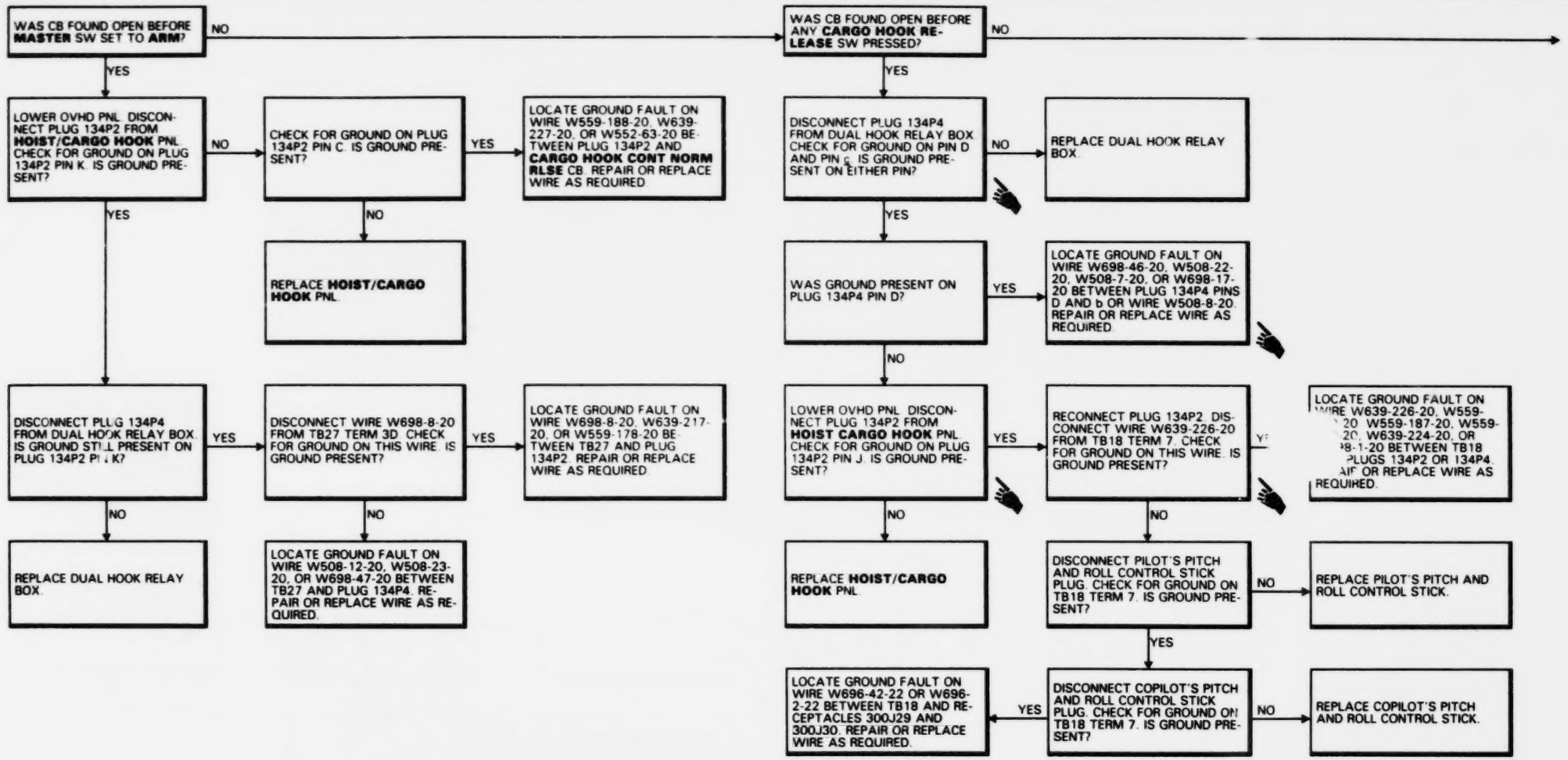
WAS CB FOUND OPEN BEFORE MASTER SW SET TO ARM?
NO
YES
LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P2 PIN K. IS GROUND PRESENT?
NO
CHECK FOR GROUND ON PLUG 134P2 PIN C. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W559-188-20, W639-227-20, OR W552-63-20 BETWEEN PLUG 134P2 AND CARGO HOOK CONT NORM RLSE CB. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.
YES
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. IS GROUND STILL PRESENT ON PLUG 134P2 PIN K?
YES
DISCONNECT WIRE W698-8-20 FROM TB27 TERM 3D. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W698-8-20, W639-217-20, OR W559-178-20 BETWEEN TB27 AND PLUG 134P2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE DUAL HOOK RELAY BOX.
NO
LOCATE GROUND FAULT ON WIRE W508-12-20, W508-23-20, OR W698-47-20 BETWEEN TB27 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
WAS CB FOUND OPEN BEFORE ANY CARGO HOOK RELEASE SW PRESSED?
NO
YES
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PIN D AND PIN c. IS GROUND PRESENT ON EITHER PIN?
NO
REPLACE DUAL HOOK RELAY BOX.
YES
WAS GROUND PRESENT ON PLUG 134P4 PIN D?
YES
LOCATE GROUND FAULT ON WIRE W698-46-20, W508-22-20, W508-7-20, OR W698-17-20 BETWEEN PLUG 134P4 PINS D AND b OR WIRE W508-8-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P2 PIN J. IS GROUND PRESENT?
YES
RECONNECT PLUG 134P2. DISCONNECT WIRE W639-226-20 FROM TB18 TERM 7. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W639-226-20, W559-[illegible]20, W559-187-20, W559-[illegible]20, W639-224-20, OR [illegible]8-1-20 BETWEEN TB18 [illegible] PLUGS 134P2 OR 134P4. [illegible]IR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
DISCONNECT PILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR GROUND ON TB18 TERM 7. IS GROUND PRESENT?
NO
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
YES
DISCONNECT COPILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR GROUND ON TB18 TERM 7. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W696-42-22 OR W696-2-22 BETWEEN TB18 AND RECEPTACLES 300J29 AND 300J30. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE COPILOT'S PITCH AND ROLL CONTROL STICK.

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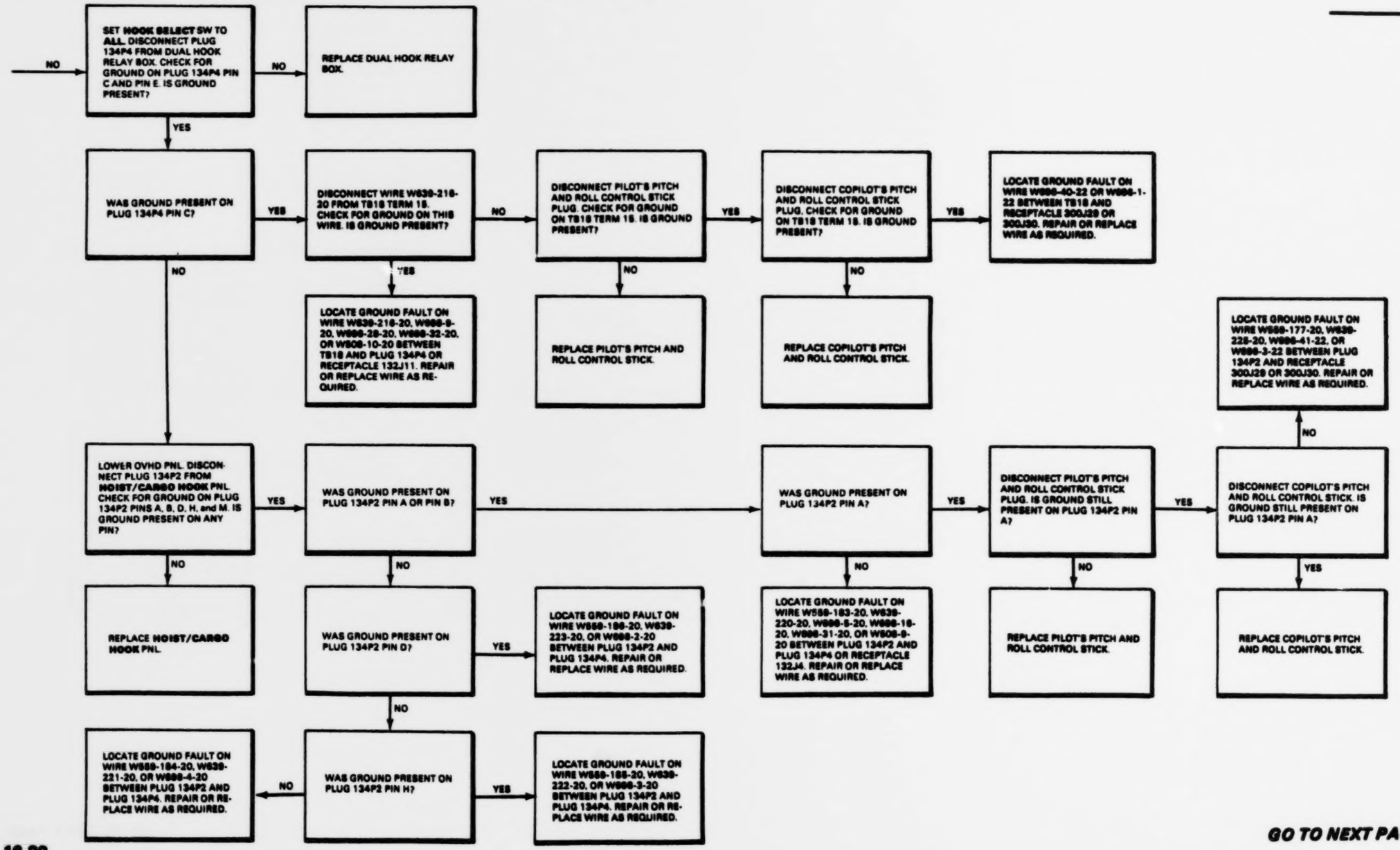
16-1.10 CARGO HOOK CONT NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)


SET HOOK SELECT SW TO ALL. DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PLUG 134P4 PIN C AND PIN E. IS GROUND PRESENT?
NO
NO
REPLACE DUAL HOOK RELAY BOX.
YES
WAS GROUND PRESENT ON PLUG 134P4 PIN C?
YES
DISCONNECT WIRE W639-216-20 FROM TB1B TERM 1B. CHECK FOR GROUND ON THIS WIRE. IS GROUND PRESENT?
NO
DISCONNECT PILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR GROUND ON TB1B TERM 1B. IS GROUND PRESENT?
YES
DISCONNECT COPILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR GROUND ON TB1B TERM 1B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W688-40-22 OR W688-1-22 BETWEEN TB1B AND RECEPTACLE 300J29 OR 300J30. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
LOCATE GROUND FAULT ON WIRE W639-216-20, W688-8-20, W688-28-20, W688-32-20, OR W808-10-20 BETWEEN TB1B AND PLUG 134P4 OR RECEPTACLE 132J11. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
NO
REPLACE COPILOT'S PITCH AND ROLL CONTROL STICK.
NO
LOCATE GROUND FAULT ON WIRE W688-177-20, W639-228-20, W688-41-22, OR W688-3-22 BETWEEN PLUG 134P2 AND RECEPTACLE 300J29 OR 300J30. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR GROUND ON PLUG 134P2 PINS A, B, D, H, and M. IS GROUND PRESENT ON ANY PIN?
YES
WAS GROUND PRESENT ON PLUG 134P2 PIN A OR PIN B?
YES
WAS GROUND PRESENT ON PLUG 134P2 PIN A?
YES
DISCONNECT PILOT'S PITCH AND ROLL CONTROL STICK PLUG. IS GROUND STILL PRESENT ON PLUG 134P2 PIN A?
YES
DISCONNECT COPILOT'S PITCH AND ROLL CONTROL STICK. IS GROUND STILL PRESENT ON PLUG 134P2 PIN A?
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
WAS GROUND PRESENT ON PLUG 134P2 PIN D?
YES
LOCATE GROUND FAULT ON WIRE W688-186-20, W639-223-20, OR W688-2-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE GROUND FAULT ON WIRE W688-183-20, W639-220-20, W688-5-20, W688-16-20, W688-31-20, OR W808-9-20 BETWEEN PLUG 134P2 AND PLUG 134P4 OR RECEPTACLE 132J4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
YES
REPLACE COPILOT'S PITCH AND ROLL CONTROL STICK.
NO
LOCATE GROUND FAULT ON WIRE W688-184-20, W639-221-20, OR W688-4-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
WAS GROUND PRESENT ON PLUG 134P2 PIN H?
YES
LOCATE GROUND FAULT ON WIRE W688-185-20, W639-222-20, OR W688-3-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.

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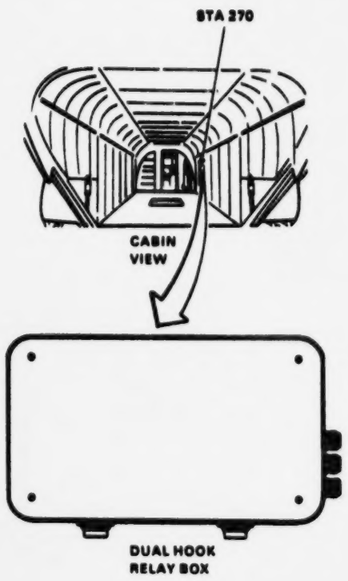
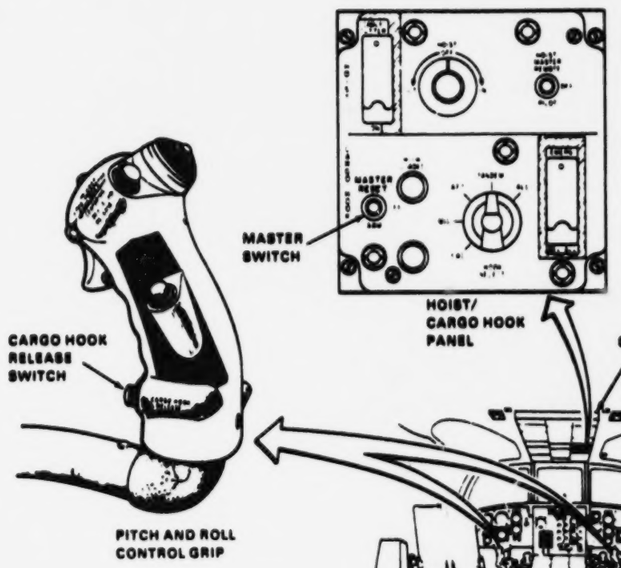
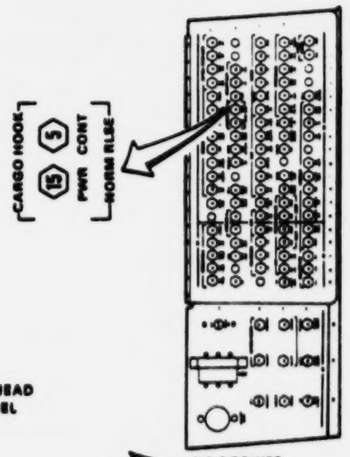
16-1.10 CARGO HOOK CONT NORM RLSE CIRCUIT BREAKER DOES NOT STAY CLOSED (Continued)







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END OF TASK

16-1.11 FWD HOOK OPEN CAPSULE LIT WHEN FORWARD CARGO HOOK CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

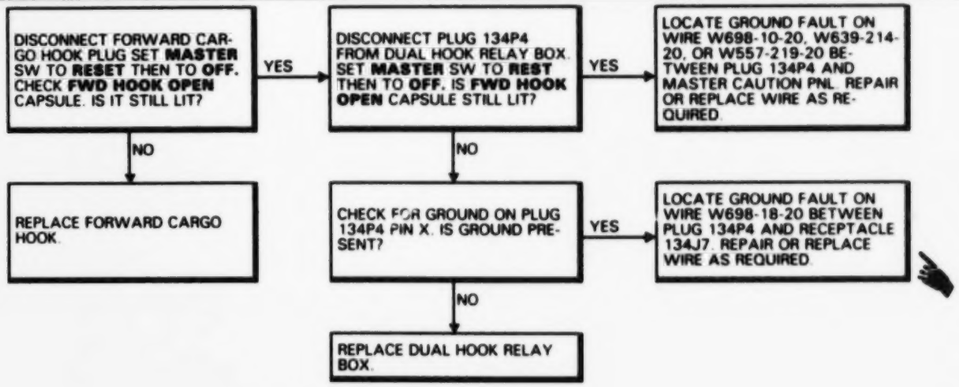
Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Multimeter

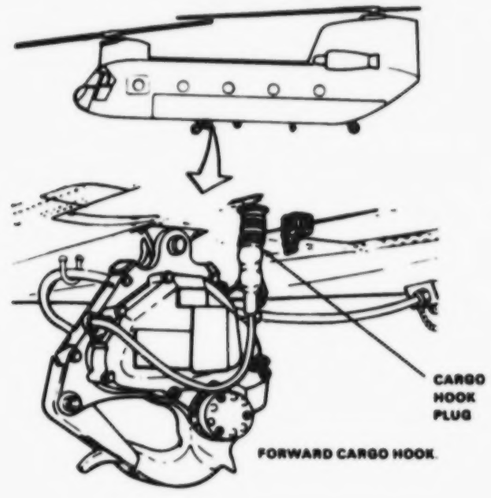
Materials:
None

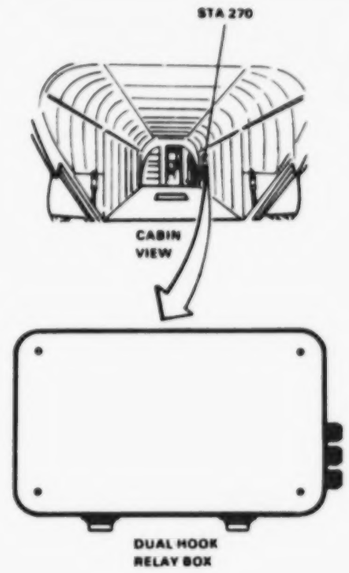
Personnel Required:
Aircraft Electrician

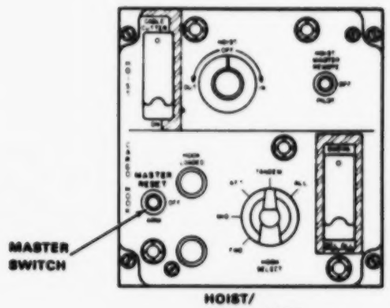
References:
TM 55-1520-240-23

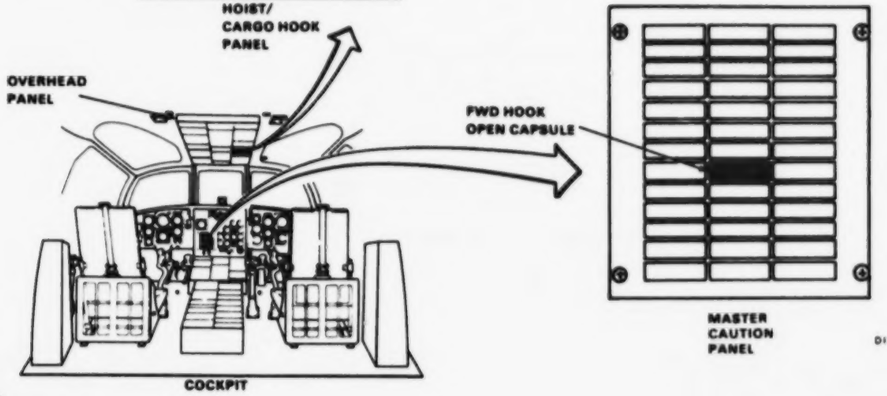
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


DISCONNECT FORWARD CARGO HOOK PLUG SET MASTER SW TO RESET THEN TO OFF. CHECK FWD HOOK OPEN CAPSULE. IS IT STILL LIT?
YES
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. SET MASTER SW TO REST THEN TO OFF. IS FWD HOOK OPEN CAPSULE STILL LIT?
YES
LOCATE GROUND FAULT ON WIRE W698-10-20, W639-214-20, OR W557-219-20 BETWEEN PLUG 134P4 AND MASTER CAUTION PNL. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
NO
REPLACE FORWARD CARGO HOOK.
CHECK FOR GROUND ON PLUG 134P4 PIN X. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W698-18-20 BETWEEN PLUG 134P4 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE DUAL HOOK RELAY BOX.









END OF TASK

16-1.12 MID HOOK OPEN CAPSULE LIT WHEN CENTER CARGO HOOK CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

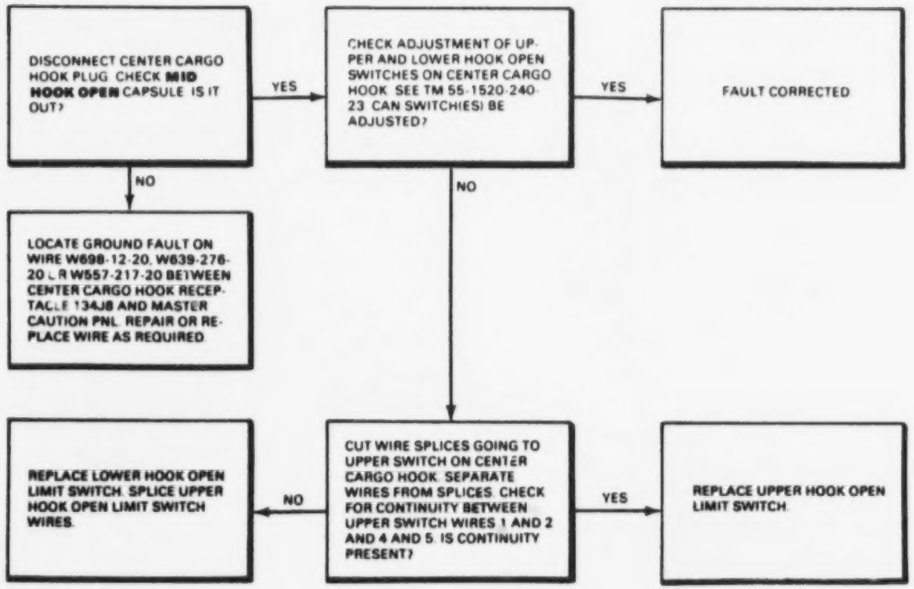
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

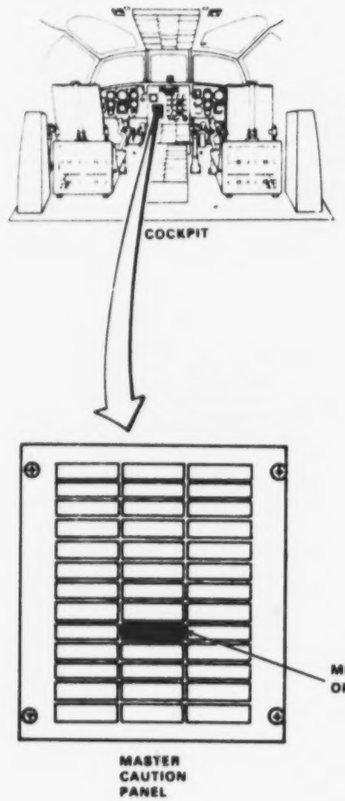
Materials:
None

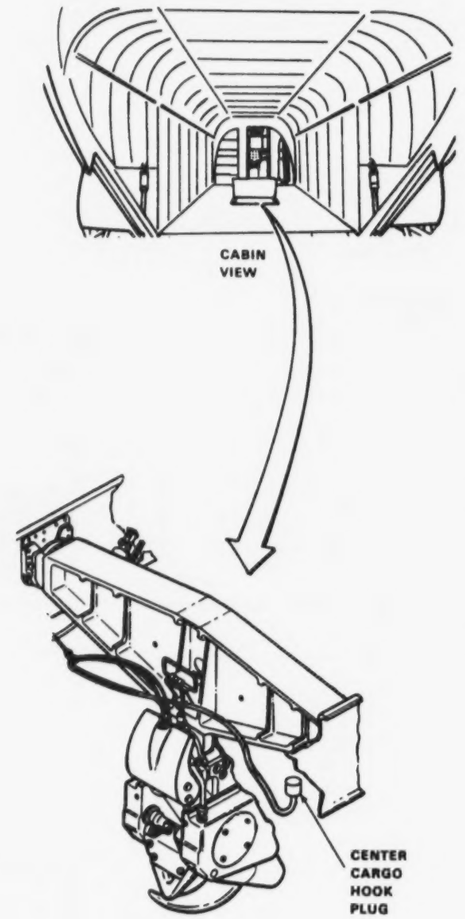
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


DISCONNECT CENTER CARGO HOOK PLUG. CHECK MID HOOK OPEN CAPSULE. IS IT OUT?
YES
CHECK ADJUSTMENT OF UPPER AND LOWER HOOK OPEN SWITCHES ON CENTER CARGO HOOK. SEE TM 55-1520-240-23. CAN SWITCH(ES) BE ADJUSTED?
YES
FAULT CORRECTED
NO
LOCATE GROUND FAULT ON WIRE W698-12-20, W639-276-20 L R W557-217-20 BETWEEN CENTER CARGO HOOK RECEPTACLE 134J8 AND MASTER CAUTION PNL. REPAIR OR REPLACE WIRE AS REQUIRED
NO
CUT WIRE SPLICES GOING TO UPPER SWITCH ON CENTER CARGO HOOK. SEPARATE WIRES FROM SPLICES. CHECK FOR CONTINUITY BETWEEN UPPER SWITCH WIRES 1 AND 2 AND 4 AND 5. IS CONTINUITY PRESENT?
NO
REPLACE LOWER HOOK OPEN LIMIT SWITCH. SPLICE UPPER HOOK OPEN LIMIT SWITCH WIRES.
YES
REPLACE UPPER HOOK OPEN LIMIT SWITCH.





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END OF TASK

16-1.13 AFT HOOK OPEN CAPSULE LIT WHEN AFT CARGO HOOK CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

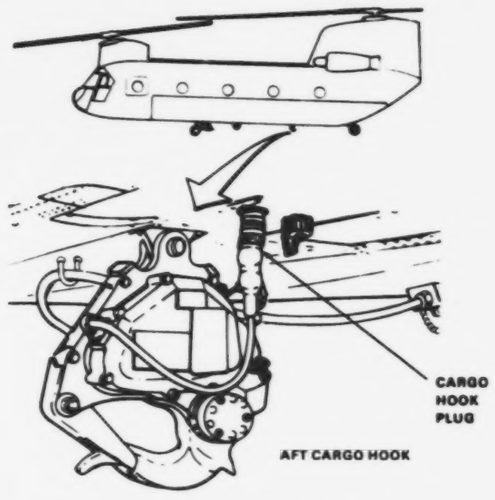
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

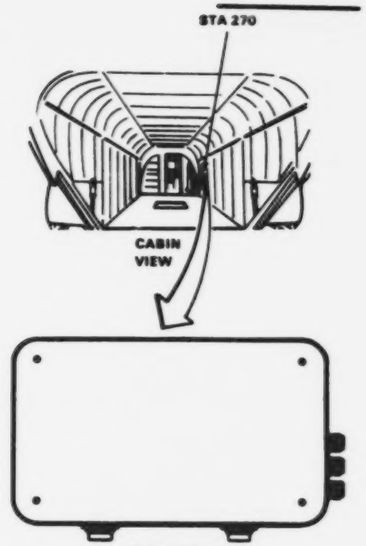
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





DISCONNECT AFT CARGO HOOK PLUG. SET **MASTER** SW TO **RESET** THEN TO **OFF.** CHECK **AFT HOOK OPEN** CAPSULE. IS IT STILL LIT?

YES → DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. SET **MASTER** SW TO **RESET** THEN TO **OFF.** IS **AFT HOOK OPEN** CAPSULE STILL LIT?

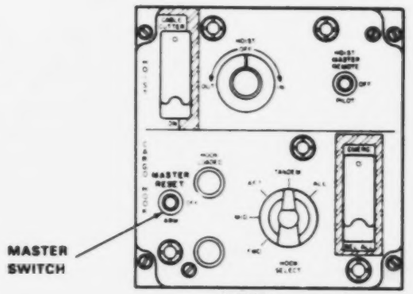
YES → LOCATE GROUND FAULT ON WIRE W698-11-20, W639-215-20, OR W557-220-20 BETWEEN PLUG 134P4 AND MASTER CAUTION PNL. REPAIR OR REPLACE WIRE AS REQUIRED.

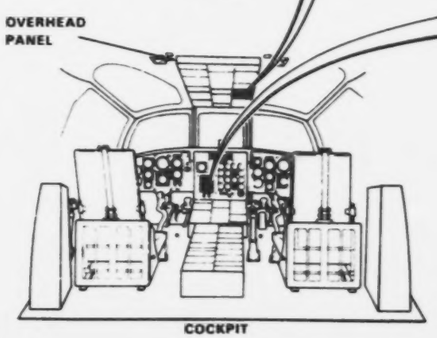
NO → REPLACE AFT CARGO HOOK.

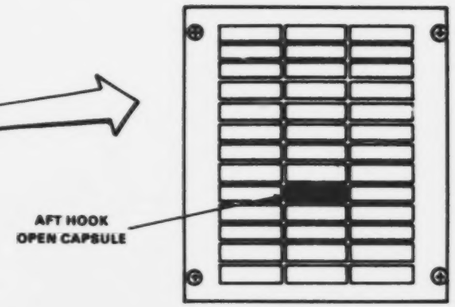
NO → CHECK FOR GROUND ON PLUG 134P4 PIN U. IS GROUND PRESENT?

YES → LOCATE GROUND FAULT ON WIRE W698-20-22 BETWEEN PLUG 134P4 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED.

NO → REPLACE DUAL HOOK RELAY BOX.







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END OF TASK

16-1.14 DUAL HOOK FAULT CAPSULE LIT

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

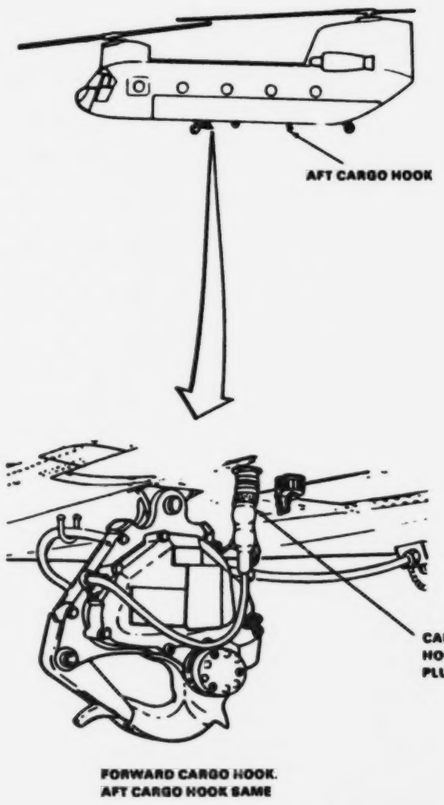
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

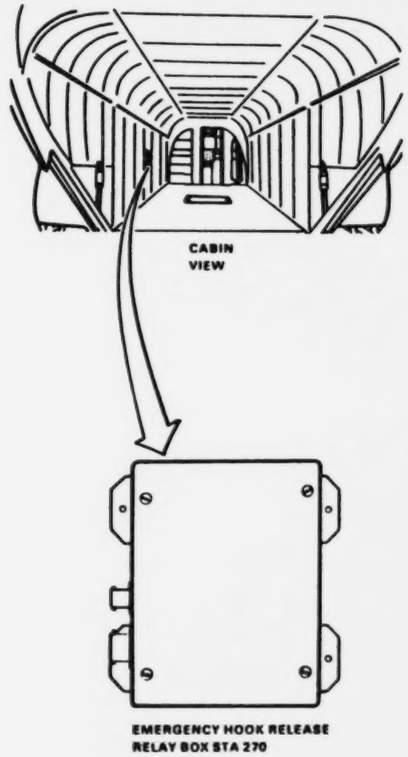
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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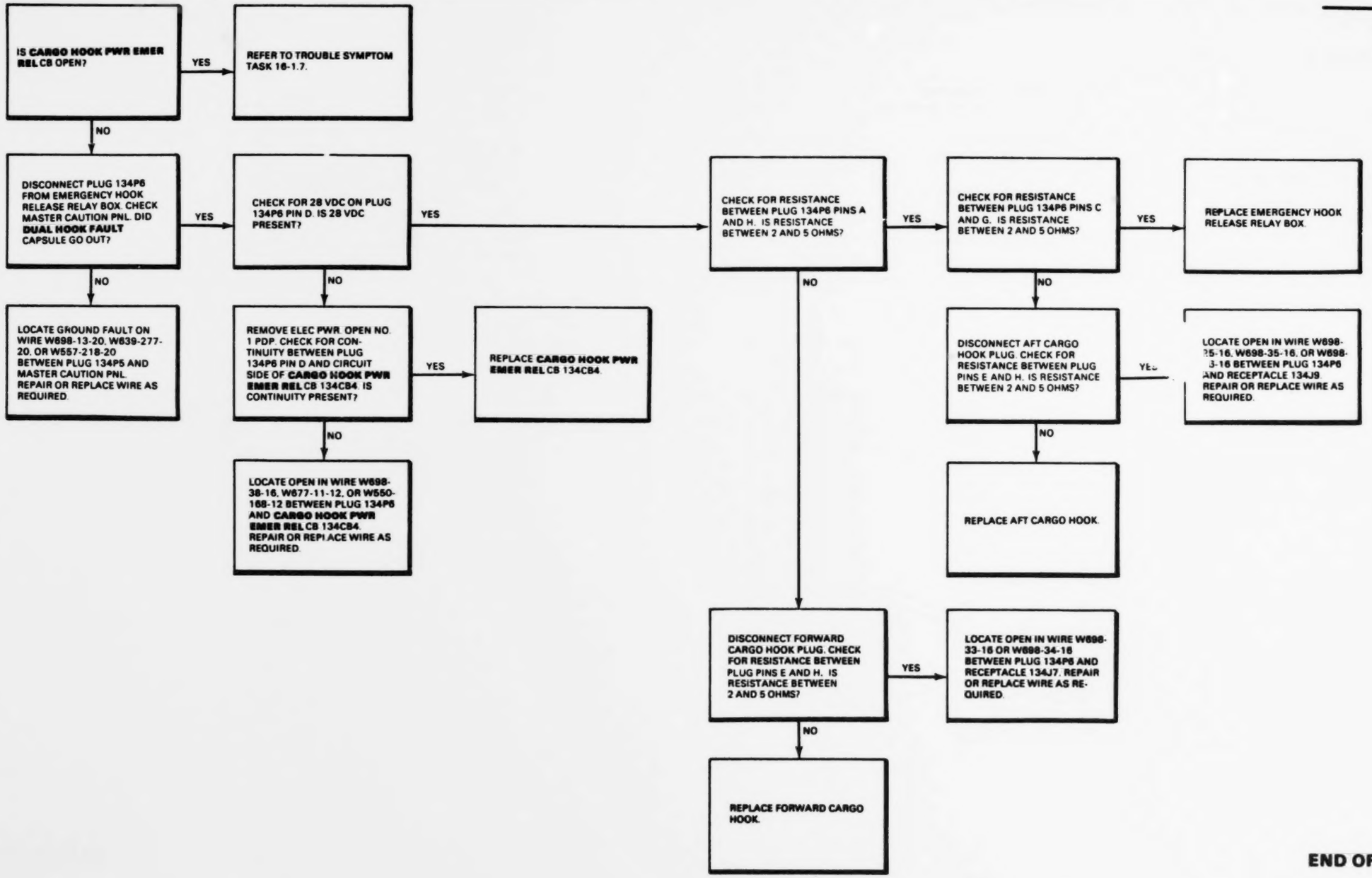
16-1.14 DUAL HOOK FAULT CAPSULE LIT (Continued)


IS CARGO HOOK PWR EMER REL CB OPEN?
YES
REFER TO TROUBLE SYMPTOM TASK 16-1.7.
NO
DISCONNECT PLUG 134P6 FROM EMERGENCY HOOK RELEASE RELAY BOX. CHECK MASTER CAUTION PNL. DID DUAL HOOK FAULT CAPSULE GO OUT?
YES
CHECK FOR 28 VDC ON PLUG 134P6 PIN D. IS 28 VDC PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W698-13-20, W639-277-20, OR W557-218-20 BETWEEN PLUG 134P5 AND MASTER CAUTION PNL. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC PWR. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN PLUG 134P6 PIN D AND CIRCUIT SIDE OF CARGO HOOK PWR EMER REL CB 134CB4. IS CONTINUITY PRESENT?
YES
REPLACE CARGO HOOK PWR EMER REL CB 134CB4.
NO
LOCATE OPEN IN WIRE W698-38-16, W677-11-12, OR W550-168-12 BETWEEN PLUG 134P6 AND CARGO HOOK PWR EMER REL CB 134CB4. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR RESISTANCE BETWEEN PLUG 134P6 PINS A AND H. IS RESISTANCE BETWEEN 2 AND 5 OHMS?
YES
CHECK FOR RESISTANCE BETWEEN PLUG 134P6 PINS C AND G. IS RESISTANCE BETWEEN 2 AND 5 OHMS?
YES
REPLACE EMERGENCY HOOK RELEASE RELAY BOX.
NO
DISCONNECT AFT CARGO HOOK PLUG. CHECK FOR RESISTANCE BETWEEN PLUG PINS E AND H. IS RESISTANCE BETWEEN 2 AND 5 OHMS?
YES
LOCATE OPEN IN WIRE W698-35-16, W698-35-16, OR W698-33-16 BETWEEN PLUG 134P6 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE AFT CARGO HOOK.
NO
DISCONNECT FORWARD CARGO HOOK PLUG. CHECK FOR RESISTANCE BETWEEN PLUG PINS E AND H. IS RESISTANCE BETWEEN 2 AND 5 OHMS?
YES
LOCATE OPEN IN WIRE W698-33-16 OR W698-34-16 BETWEEN PLUG 134P6 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE FORWARD CARGO HOOK.

END OF TASK

16-1.15 DUAL HOOK RELAY BOX LIGHT(S) DO NOT COME ON WHEN PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

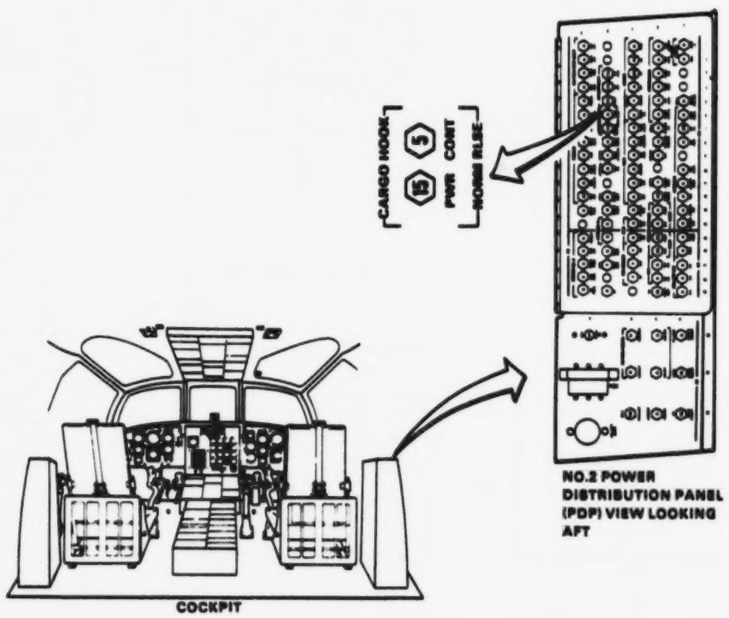
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

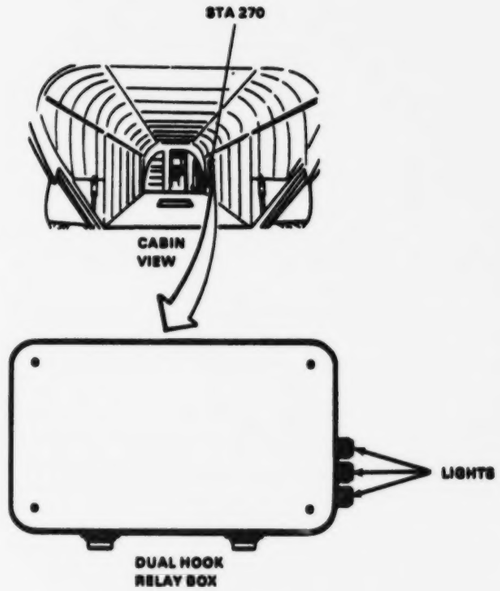
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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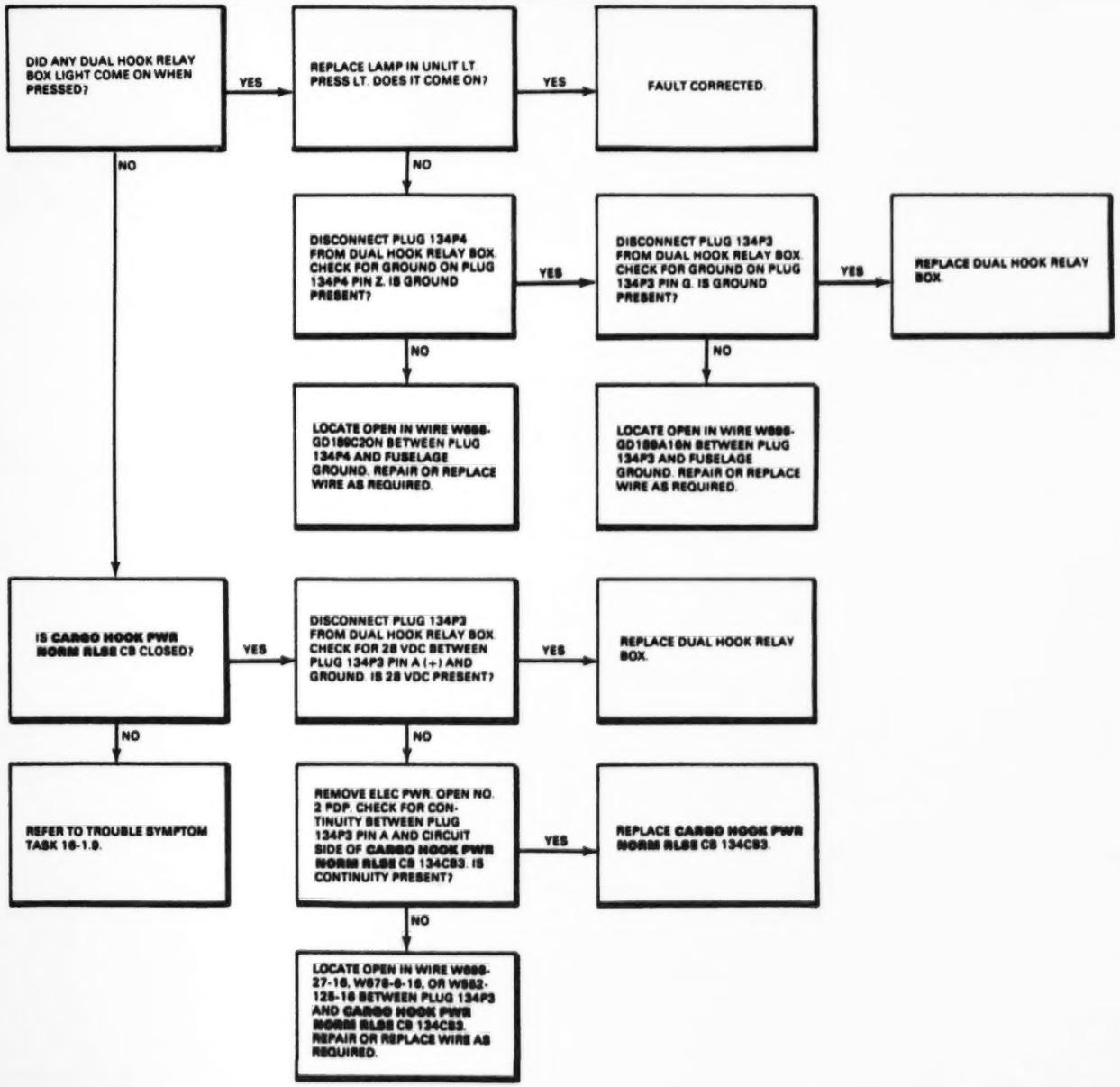
16-1.15 DUAL HOOK RELAY BOX LIGHT(S) DO NOT COME ON WHEN PRESSED (Continued)


DID ANY DUAL HOOK RELAY BOX LIGHT COME ON WHEN PRESSED?
YES
REPLACE LAMP IN UNLIT LT. PRESS LT. DOES IT COME ON?
YES
FAULT CORRECTED.
NO
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PLUG 134P4 PIN Z. IS GROUND PRESENT?
YES
DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR GROUND ON PLUG 134P3 PIN G. IS GROUND PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
NO
LOCATE OPEN IN WIRE W696-GD189C20N BETWEEN PLUG 134P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W696-GD189A16N BETWEEN PLUG 134P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
IS CARGO HOOK PWR NORM RLSE CB CLOSED?
YES
DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR 28 VDC BETWEEN PLUG 134P3 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
NO
REFER TO TROUBLE SYMPTOM TASK 16-1.9.
REMOVE ELEC PWR. OPEN NO. 2 PDP. CHECK FOR CONTINUITY BETWEEN PLUG 134P3 PIN A AND CIRCUIT SIDE OF CARGO HOOK PWR NORM RLSE CB 134CB3. IS CONTINUITY PRESENT?
YES
REPLACE CARGO HOOK PWR NORM RLSE CB 134CB3.
NO
LOCATE OPEN IN WIRE W696-27-16, W678-6-16, OR W652-125-16 BETWEEN PLUG 134P3 AND CARGO HOOK PWR NORM RLSE CB 134CB3. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-1.16 DUAL HOOK FAULT LIGHT DOES NOT COME ON WITH HOOK DISCONNECTED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

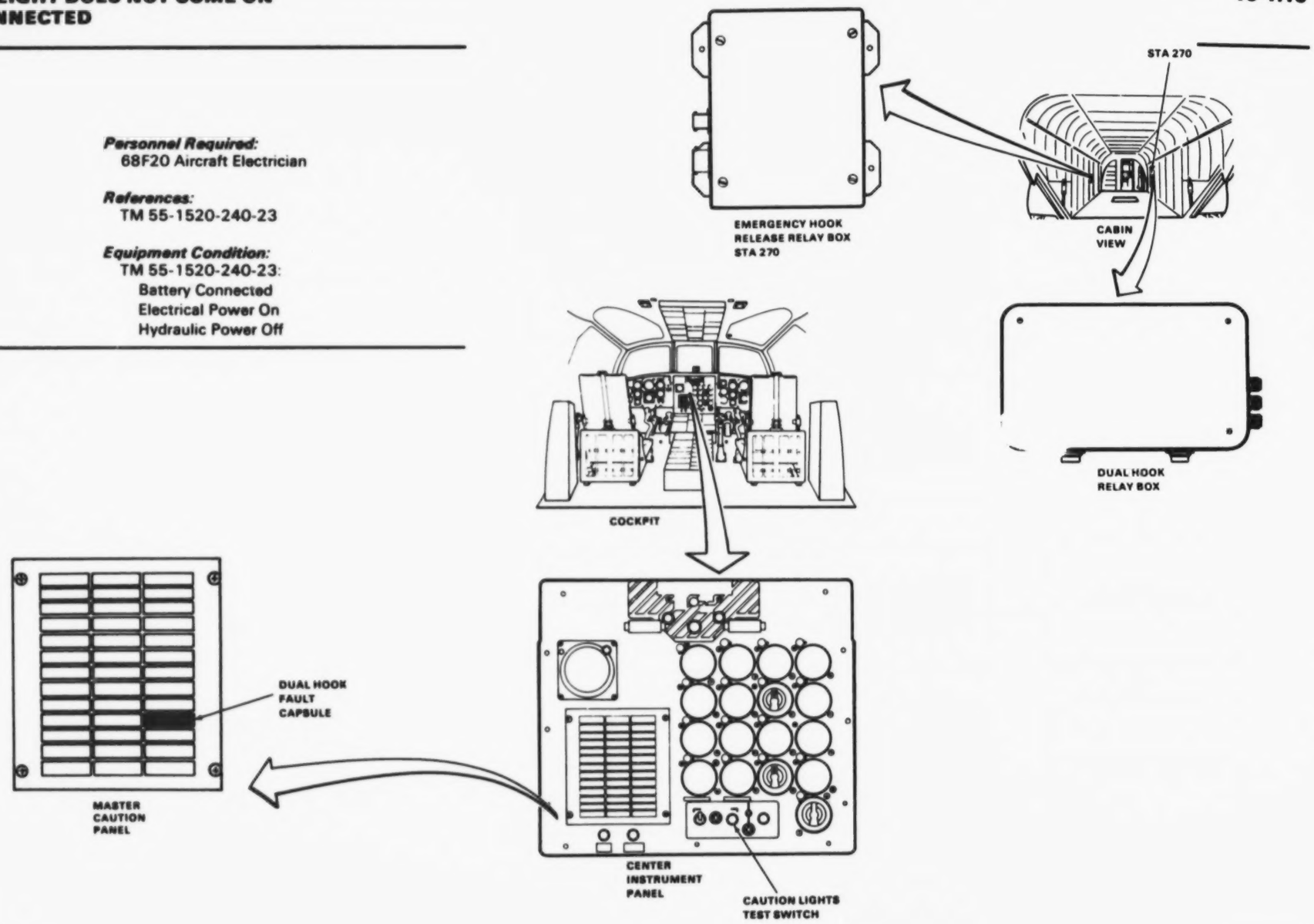
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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16-1.17 ARMED SW FAIL LIGHT DOES NOT COME ON WITH MASTER SWITCH AT ARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

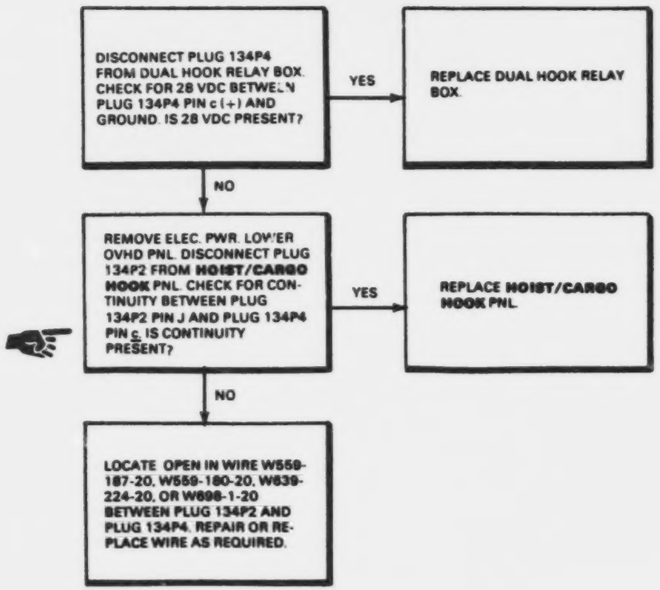
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

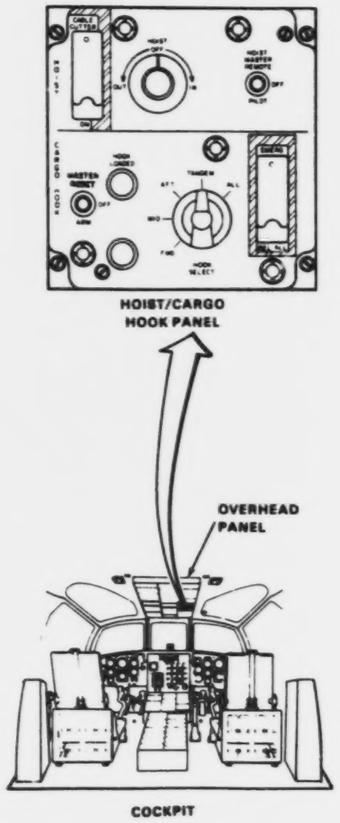
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off


DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN c (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P2 PIN J AND PLUG 134P4 PIN c. IS CONTINUITY PRESENT?
YES
REPLACE HOIST/CARGO HOOK PNL.
NO
LOCATE OPEN IN WIRE W559-187-20, W559-180-20, W839-224-20, OR W898-1-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.



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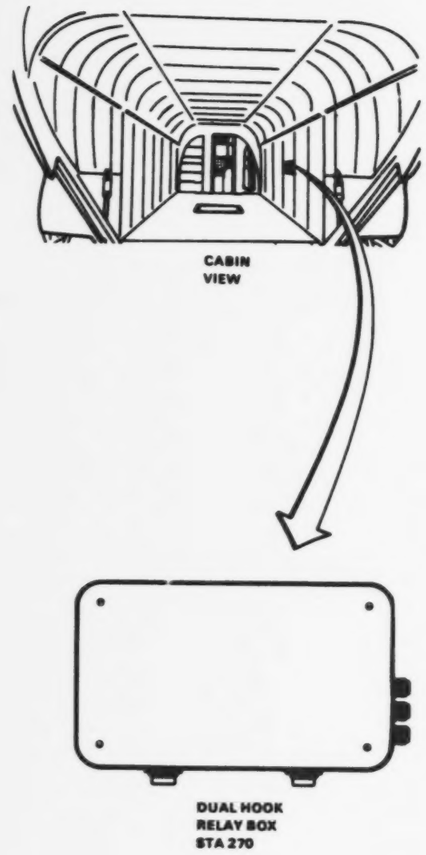

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END OF TASK

16-1.18 RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN PILOT'S CARGO HOOK RELEASE SWITCH PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

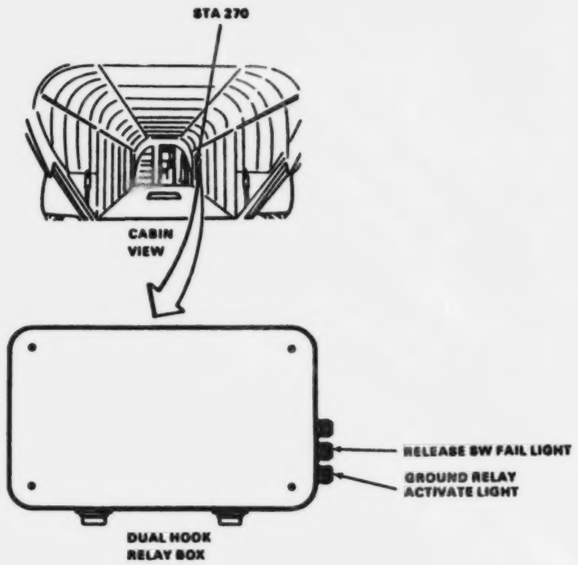
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

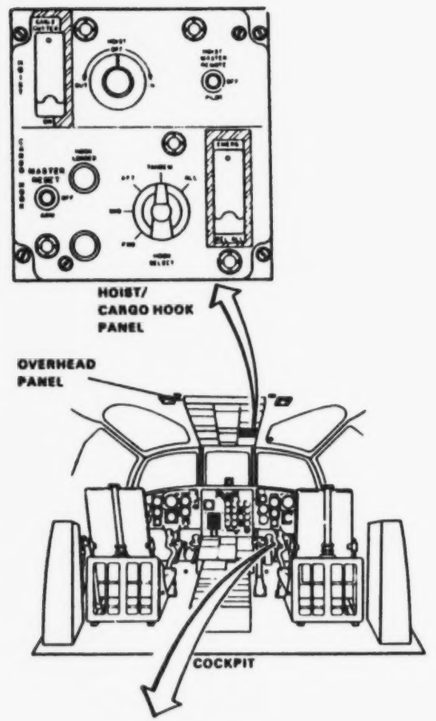
Materials:
None

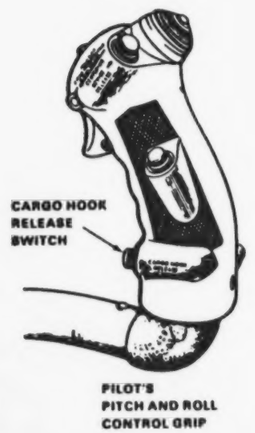
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off







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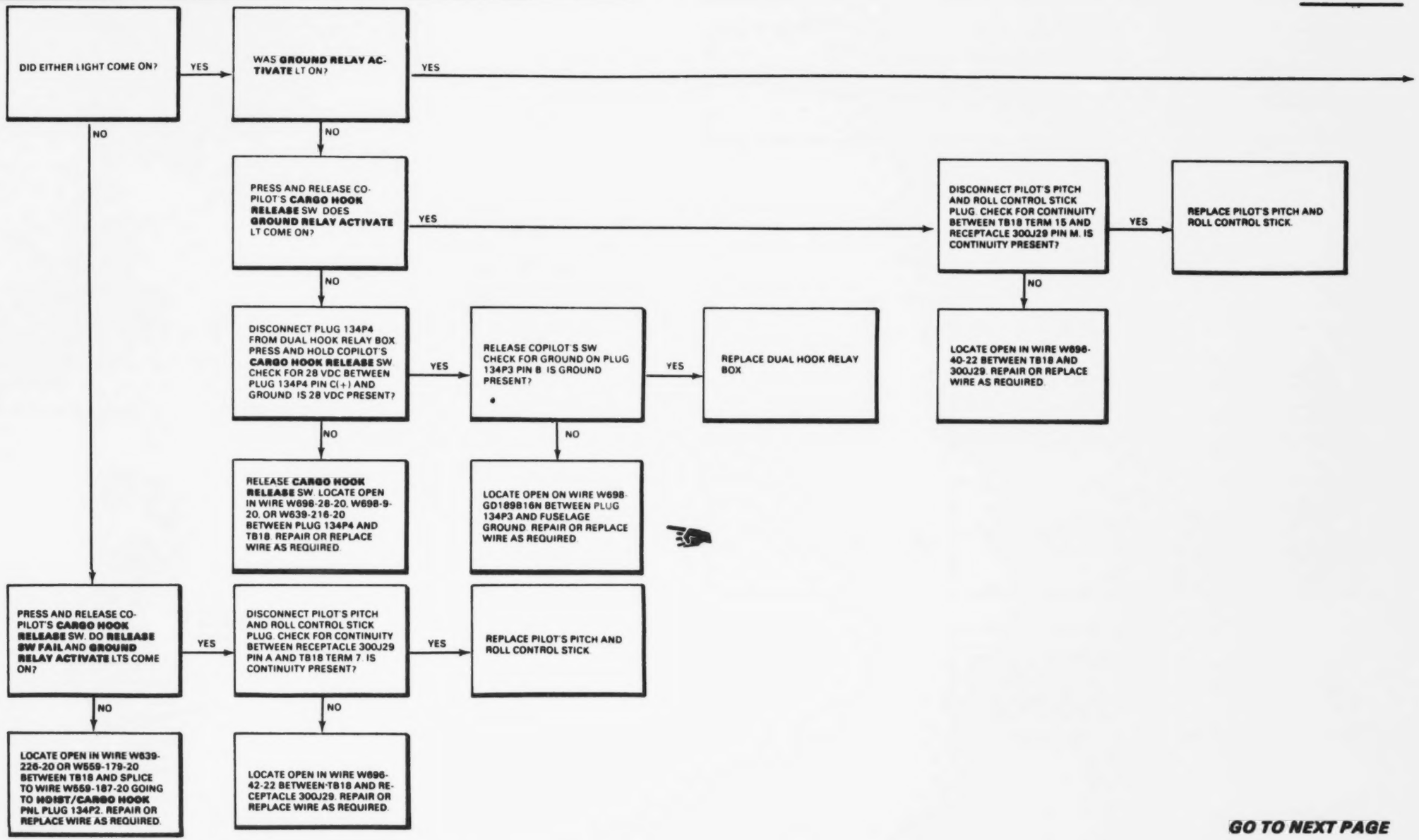
16-1.18 RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN PILOT'S CARGO HOOK RELEASE SWITCH PRESSED (Continued)


DID EITHER LIGHT COME ON?
YES
WAS GROUND RELAY ACTIVATE LT ON?
YES
NO
PRESS AND RELEASE CO-PILOT'S CARGO HOOK RELEASE SW. DOES GROUND RELAY ACTIVATE LT COME ON?
YES
DISCONNECT PILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR CONTINUITY BETWEEN TB18 TERM 15 AND RECEPTACLE 300J29 PIN M. IS CONTINUITY PRESENT?
YES
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
NO
LOCATE OPEN IN WIRE W698-40-22 BETWEEN TB18 AND 300J29. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX PRESS AND HOLD COPILOT'S CARGO HOOK RELEASE SW CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN C(+) AND GROUND. IS 28 VDC PRESENT?
YES
RELEASE COPILOT'S SW CHECK FOR GROUND ON PLUG 134P3 PIN B. IS GROUND PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX
NO
RELEASE CARGO HOOK RELEASE SW. LOCATE OPEN IN WIRE W698-28-20, W698-9-20, OR W639-216-20 BETWEEN PLUG 134P4 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN ON WIRE W698-GD189816N BETWEEN PLUG 134P3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
PRESS AND RELEASE CO-PILOT'S CARGO HOOK RELEASE SW. DO RELEASE SW FAIL AND GROUND RELAY ACTIVATE LTS COME ON?
YES
DISCONNECT PILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR CONTINUITY BETWEEN RECEPTACLE 300J29 PIN A AND TB18 TERM 7. IS CONTINUITY PRESENT?
YES
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
NO
LOCATE OPEN IN WIRE W639-226-20 OR W559-179-20 BETWEEN TB18 AND SPLICE TO WIRE W559-187-20 GOING TO HOIST/CARGO HOOK PNL PLUG 134P2. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W696-42-22 BETWEEN TB18 AND RECEPTACLE 300J29. REPAIR OR REPLACE WIRE AS REQUIRED.

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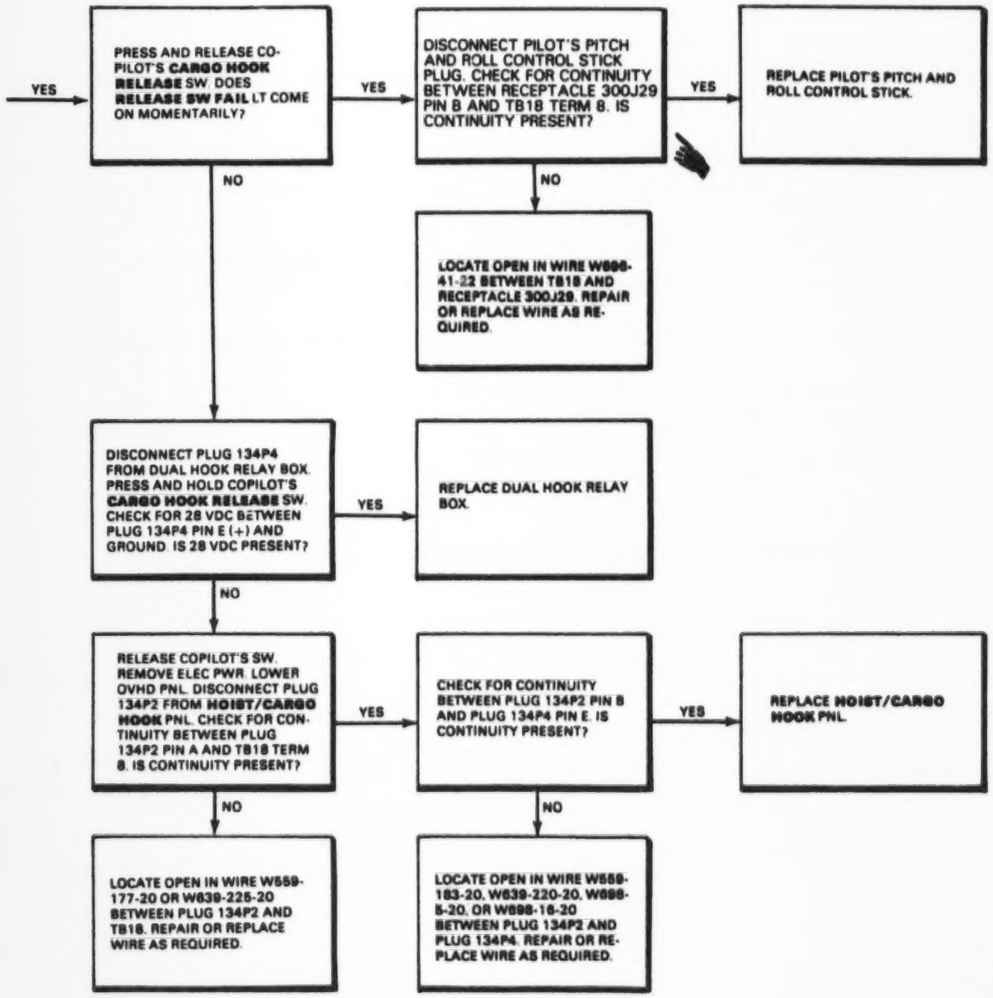
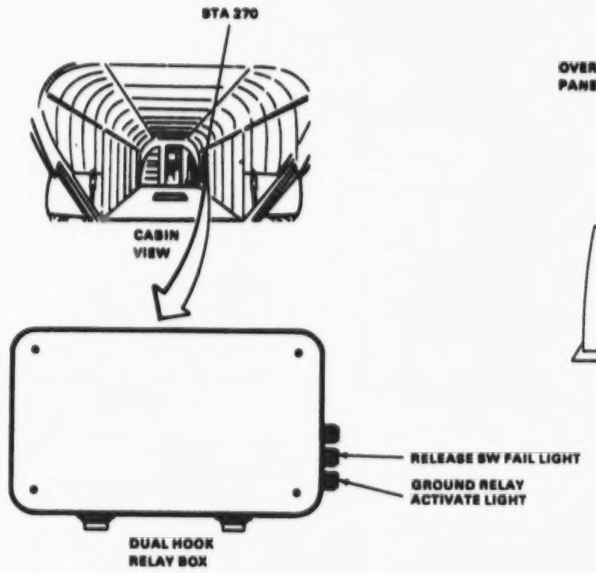
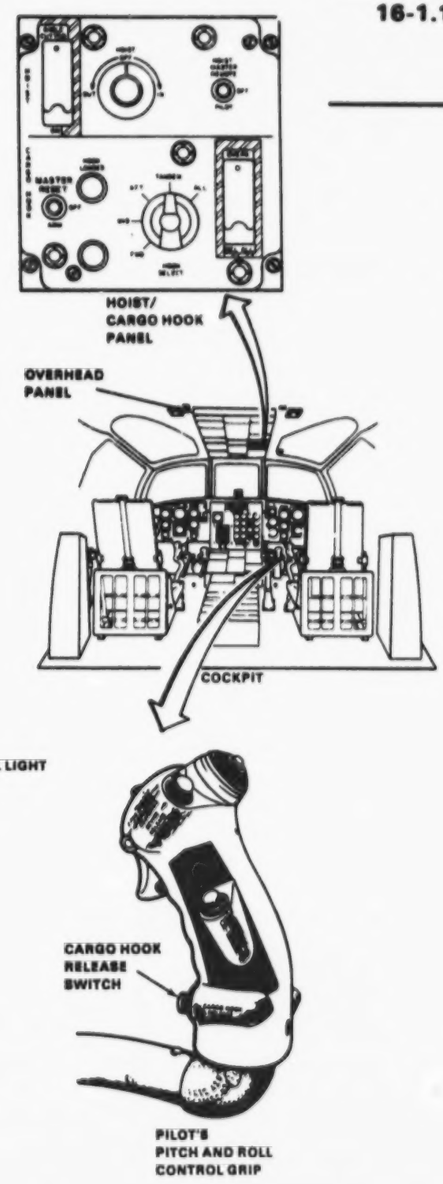
16-1.18 RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN PILOT CARGO HOOK RELEASE SWITCH PRESSED (Continued)


PRESS AND RELEASE CO-PILOT'S CARGO HOOK RELEASE SW. DOES RELEASE SW FAIL LT COME ON MOMENTARILY?
YES
NO
DISCONNECT PILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR CONTINUITY BETWEEN RECEPTACLE 300J29 PIN B AND TB18 TERM 8. IS CONTINUITY PRESENT?
YES
NO
REPLACE PILOT'S PITCH AND ROLL CONTROL STICK.
LOCATE OPEN IN WIRE W699-41-22 BETWEEN TB18 AND RECEPTACLE 300J29. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. PRESS AND HOLD COPILOT'S CARGO HOOK RELEASE SW. CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN E (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
REPLACE DUAL HOOK RELAY BOX.
RELEASE COPILOT'S SW. REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P2 PIN A AND TB18 TERM 8. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-177-20 OR W639-225-20 BETWEEN PLUG 134P2 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN PLUG 134P2 PIN B AND PLUG 134P4 PIN E. IS CONTINUITY PRESENT?
YES
NO
REPLACE HOIST/CARGO HOOK PNL.
LOCATE OPEN IN WIRE W559-183-20, W639-220-20, W698-5-20, OR W698-16-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.





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END OF TASK

16-1.19 RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN COPILOT'S CARGO HOOK RELEASE SWITCH PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

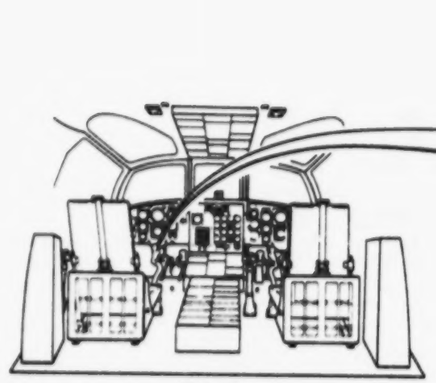
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

Materials:
None

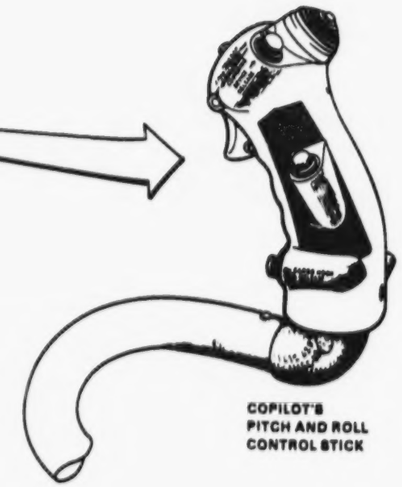
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

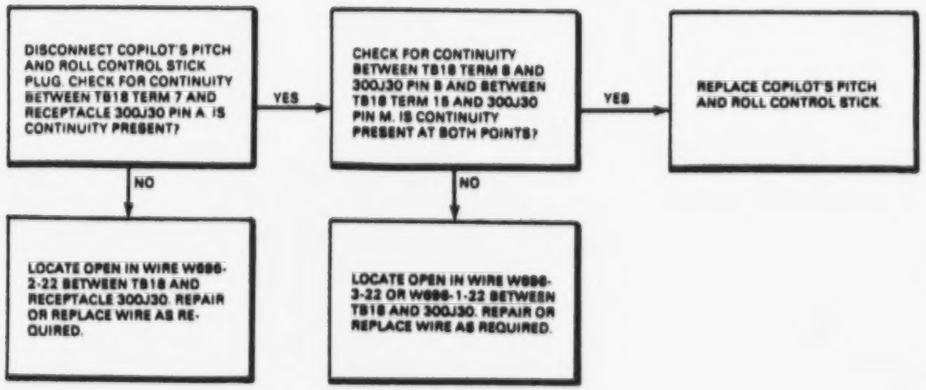
Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



COCKPIT



COPILOT'S PITCH AND ROLL CONTROL STICK


DISCONNECT COPILOT'S PITCH AND ROLL CONTROL STICK PLUG. CHECK FOR CONTINUITY BETWEEN TB18 TERM 7 AND RECEPTACLE 300J30 PIN A. IS CONTINUITY PRESENT?
YES
CHECK FOR CONTINUITY BETWEEN TB18 TERM 8 AND 300J30 PIN B AND BETWEEN TB18 TERM 18 AND 300J30 PIN M. IS CONTINUITY PRESENT AT BOTH POINTS?
YES
REPLACE COPILOT'S PITCH AND ROLL CONTROL STICK.
NO
LOCATE OPEN IN WIRE W696-2-22 BETWEEN TB18 AND RECEPTACLE 300J30. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W696-3-22 OR W696-1-22 BETWEEN TB18 AND 300J30. REPAIR OR REPLACE WIRE AS REQUIRED.

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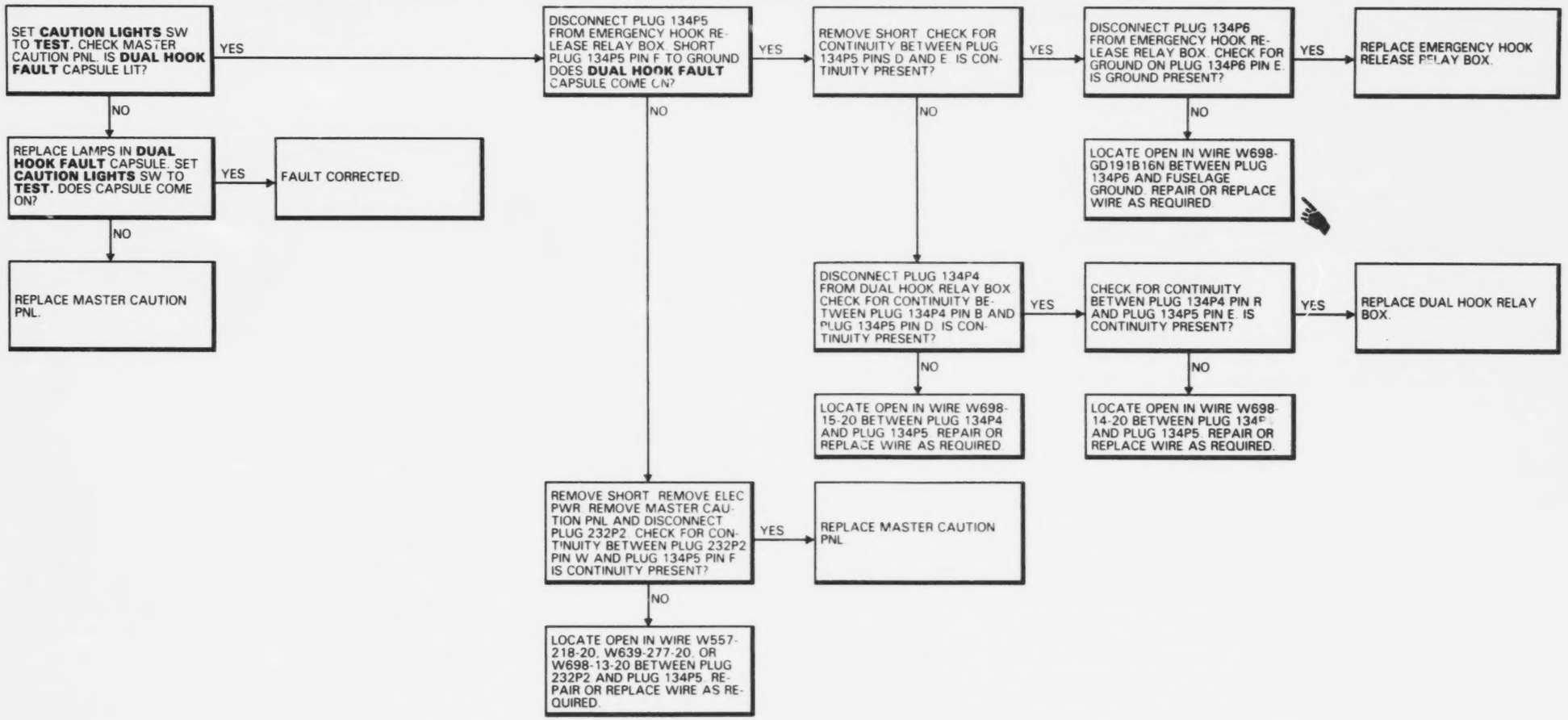
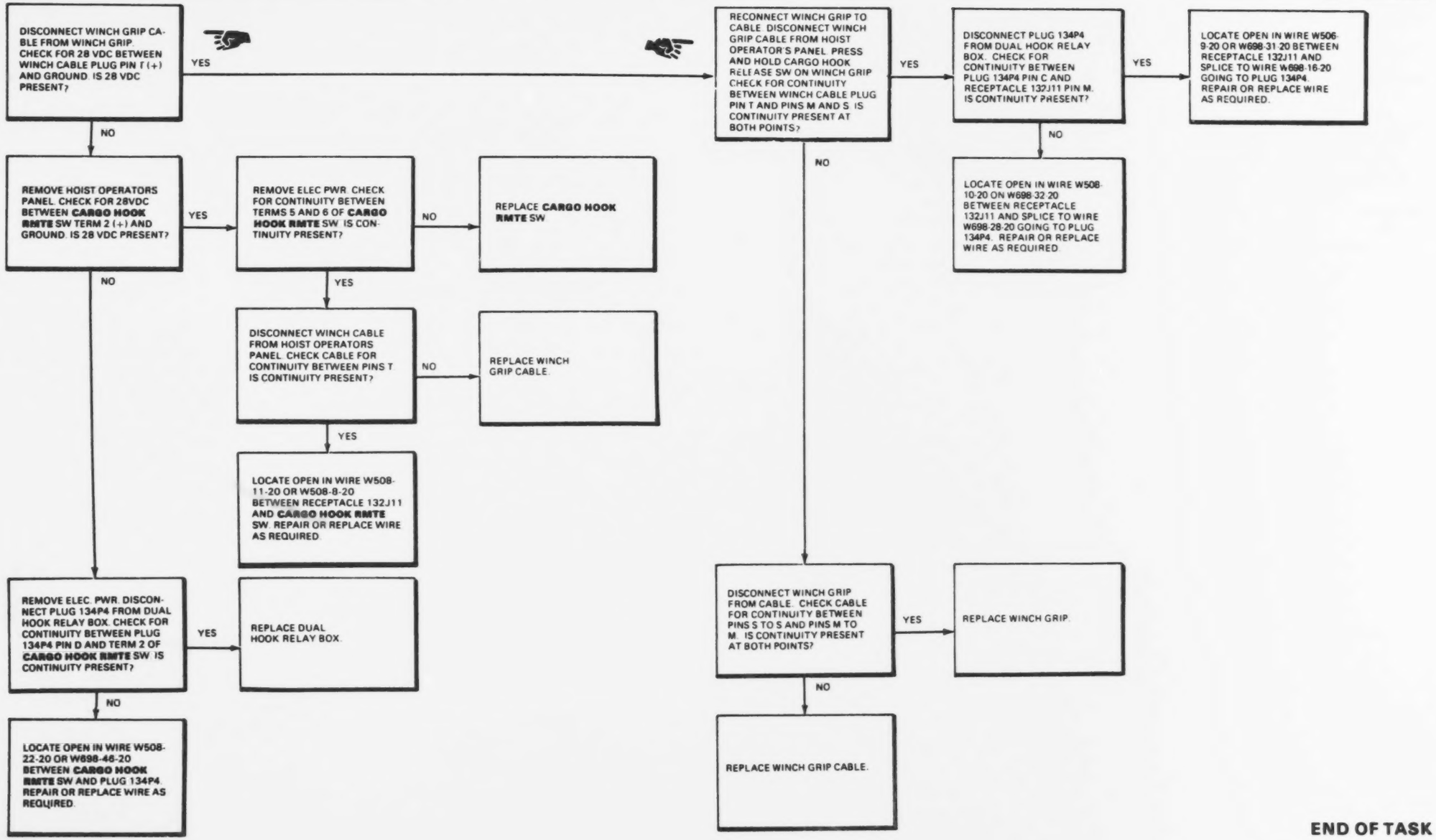
END OF TASK


SET CAUTION LIGHTS SW TO TEST. CHECK MASTER CAUTION PNL. IS DUAL HOOK FAULT CAPSULE LIT?
YES
NO
REPLACE LAMPS IN DUAL HOOK FAULT CAPSULE. SET CAUTION LIGHTS SW TO TEST. DOES CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
REPLACE MASTER CAUTION PNL.
DISCONNECT PLUG 134P5 FROM EMERGENCY HOOK RELEASE RELAY BOX. SHORT PLUG 134P5 PIN F TO GROUND DOES DUAL HOOK FAULT CAPSULE COME ON?
YES
NO
REMOVE SHORT. CHECK FOR CONTINUITY BETWEEN PLUG 134P5 PINS D AND E. IS CONTINUITY PRESENT?
YES
NO
DISCONNECT PLUG 134P6 FROM EMERGENCY HOOK RELEASE RELAY BOX. CHECK FOR GROUND ON PLUG 134P6 PIN E. IS GROUND PRESENT?
YES
REPLACE EMERGENCY HOOK RELEASE RELAY BOX.
NO
LOCATE OPEN IN WIRE W698-GD191B16N BETWEEN PLUG 134P6 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN B AND PLUG 134P5 PIN D. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W698-15-20 BETWEEN PLUG 134P4 AND PLUG 134P5. REPAIR OR REPLACE WIRE AS REQUIRED
CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN R AND PLUG 134P5 PIN E. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
LOCATE OPEN IN WIRE W698-14-20 BETWEEN PLUG 134P4 AND PLUG 134P5. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE SHORT. REMOVE ELEC PWR. REMOVE MASTER CAUTION PNL AND DISCONNECT PLUG 232P2. CHECK FOR CONTINUITY BETWEEN PLUG 232P2 PIN W AND PLUG 134P5 PIN F IS CONTINUITY PRESENT?
YES
REPLACE MASTER CAUTION PNL
NO
LOCATE OPEN IN WIRE W557-218-20, W639-277-20, OR W698-13-20 BETWEEN PLUG 232P2 AND PLUG 134P5. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-1.20 RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN HOIST OPERATOR'S CARGO HOOK RELEASE SWITCH PRESSED (Continued)


DISCONNECT WINCH GRIP CABLE FROM WINCH GRIP. CHECK FOR 28 VDC BETWEEN WINCH CABLE PLUG PIN T (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
RECONNECT WINCH GRIP TO CABLE. DISCONNECT WINCH GRIP CABLE FROM HOIST OPERATOR'S PANEL. PRESS AND HOLD CARGO HOOK RELEASE SW ON WINCH GRIP. CHECK FOR CONTINUITY BETWEEN WINCH CABLE PLUG PIN T AND PINS M AND S. IS CONTINUITY PRESENT AT BOTH POINTS?
YES
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN C AND RECEPTACLE 132J11 PIN M. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W506-9-20 OR W698-31-20 BETWEEN RECEPTACLE 132J11 AND SPLICE TO WIRE W698-16-20 GOING TO PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W508-10-20 ON W698-32-20 BETWEEN RECEPTACLE 132J11 AND SPLICE TO WIRE W698-28-20 GOING TO PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE HOIST OPERATORS PANEL. CHECK FOR 28VDC BETWEEN CARGO HOOK RMTE SW TERM 2 (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
REMOVE ELEC PWR. CHECK FOR CONTINUITY BETWEEN TERMS 5 AND 6 OF CARGO HOOK RMTE SW. IS CONTINUITY PRESENT?
NO
YES
REPLACE CARGO HOOK RMTE SW
DISCONNECT WINCH CABLE FROM HOIST OPERATORS PANEL. CHECK CABLE FOR CONTINUITY BETWEEN PINS T IS CONTINUITY PRESENT?
NO
YES
REPLACE WINCH GRIP CABLE.
LOCATE OPEN IN WIRE W508-11-20 OR W508-8-20 BETWEEN RECEPTACLE 132J11 AND CARGO HOOK RMTE SW. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC. PWR. DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN D AND TERM 2 OF CARGO HOOK RMTE SW. IS CONTINUITY PRESENT?
YES
NO
REPLACE DUAL HOOK RELAY BOX.
LOCATE OPEN IN WIRE W508-22-20 OR W698-46-20 BETWEEN CARGO HOOK RMTE SW AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT WINCH GRIP FROM CABLE. CHECK CABLE FOR CONTINUITY BETWEEN PINS S TO S AND PINS M TO M. IS CONTINUITY PRESENT AT BOTH POINTS?
YES
NO
REPLACE WINCH GRIP.
REPLACE WINCH GRIP CABLE.

END OF TASK

16-1.21 FORWARD CARGO HOOK DOES NOT OPEN

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

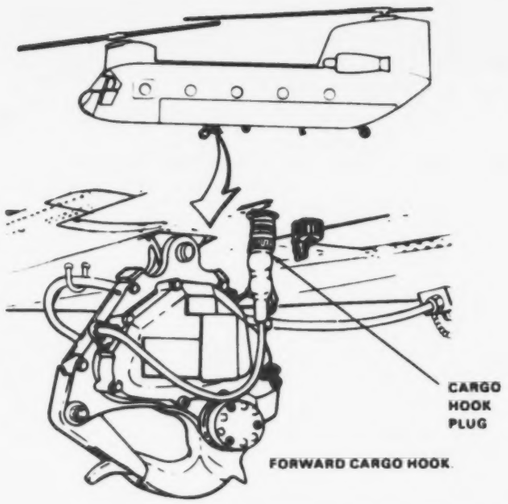
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

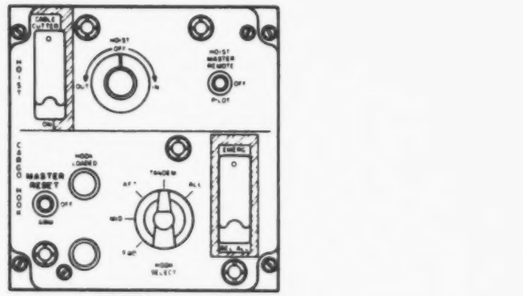
Materials:
None

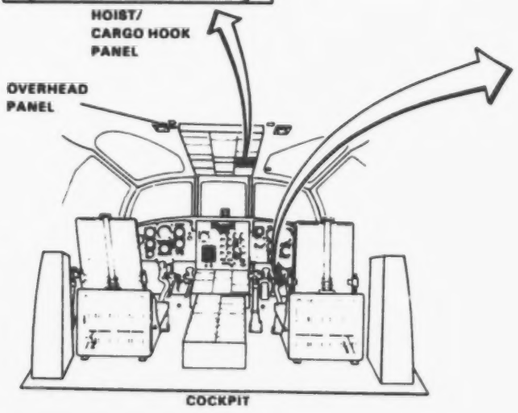
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

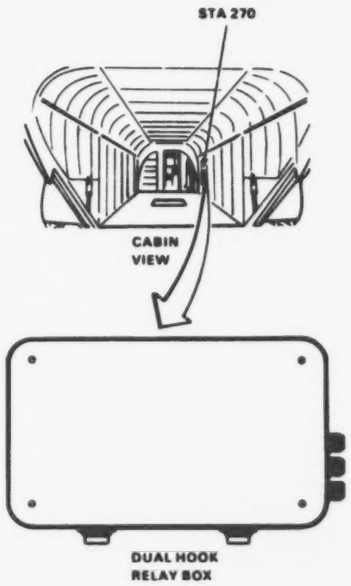
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off









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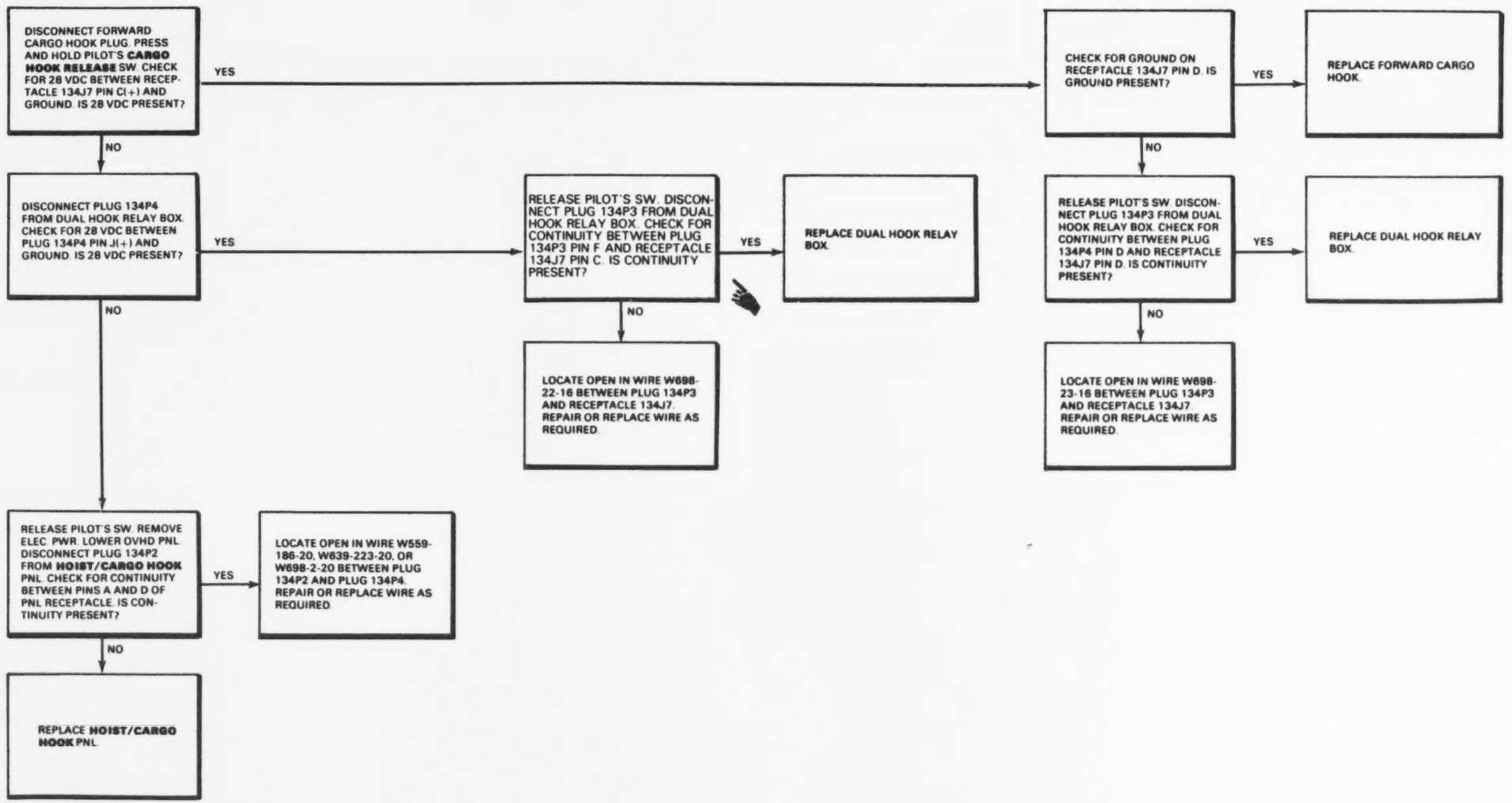
16-1.21 FORWARD CARGO HOOK DOES NOT OPEN (Continued)


DISCONNECT FORWARD CARGO HOOK PLUG. PRESS AND HOLD PILOT'S CARGO HOOK RELEASE SW. CHECK FOR 28 VDC BETWEEN RECEPTACLE 134J7 PIN C(+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
CHECK FOR GROUND ON RECEPTACLE 134J7 PIN D. IS GROUND PRESENT?
YES
REPLACE FORWARD CARGO HOOK.
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN J(+) AND GROUND. IS 28 VDC PRESENT?
YES
RELEASE PILOT'S SW. DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P3 PIN F AND RECEPTACLE 134J7 PIN C. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
LOCATE OPEN IN WIRE W698-22-16 BETWEEN PLUG 134P3 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED.
RELEASE PILOT'S SW. DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN D AND RECEPTACLE 134J7 PIN D. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
LOCATE OPEN IN WIRE W698-23-16 BETWEEN PLUG 134P3 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
RELEASE PILOT'S SW. REMOVE ELEC PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PINS A AND D OF PNL RECEPTACLE. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-186-20, W639-223-20, OR W698-2-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.

END OF TASK

16-1.22 FWD HOOK OPEN CAPSULE DOES NOT COME ON WHEN FORWARD CARGO HOOK OPENS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

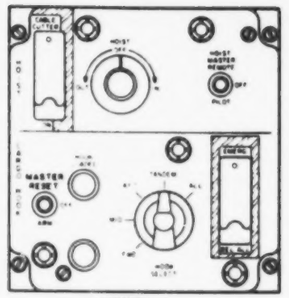
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

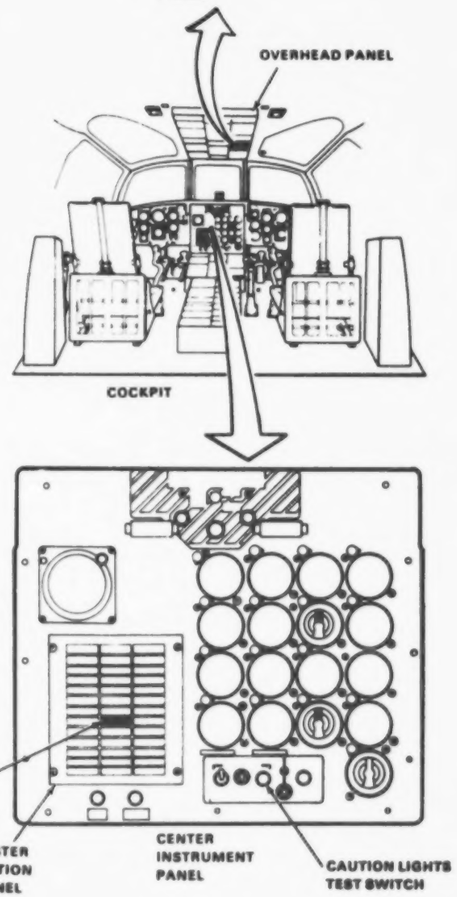
Materials:
None

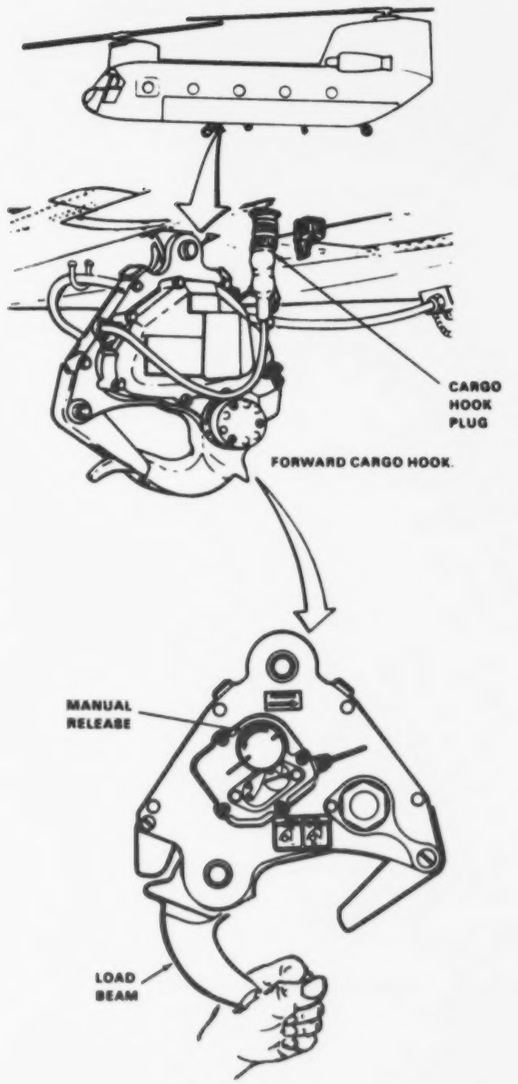
Personnel Required:
68F20 Aircraft Electrician

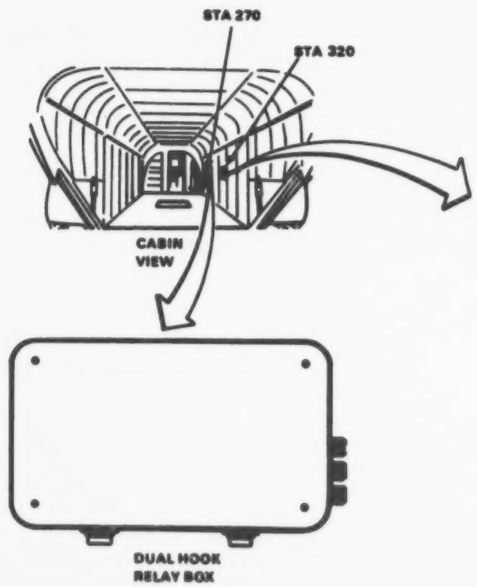
References:
TM 55-1520-240-23

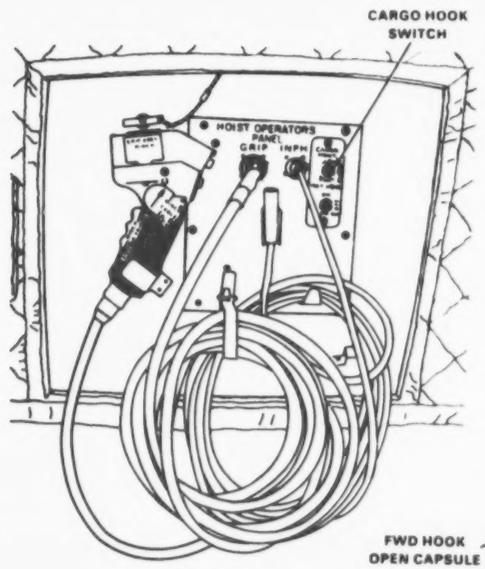
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off











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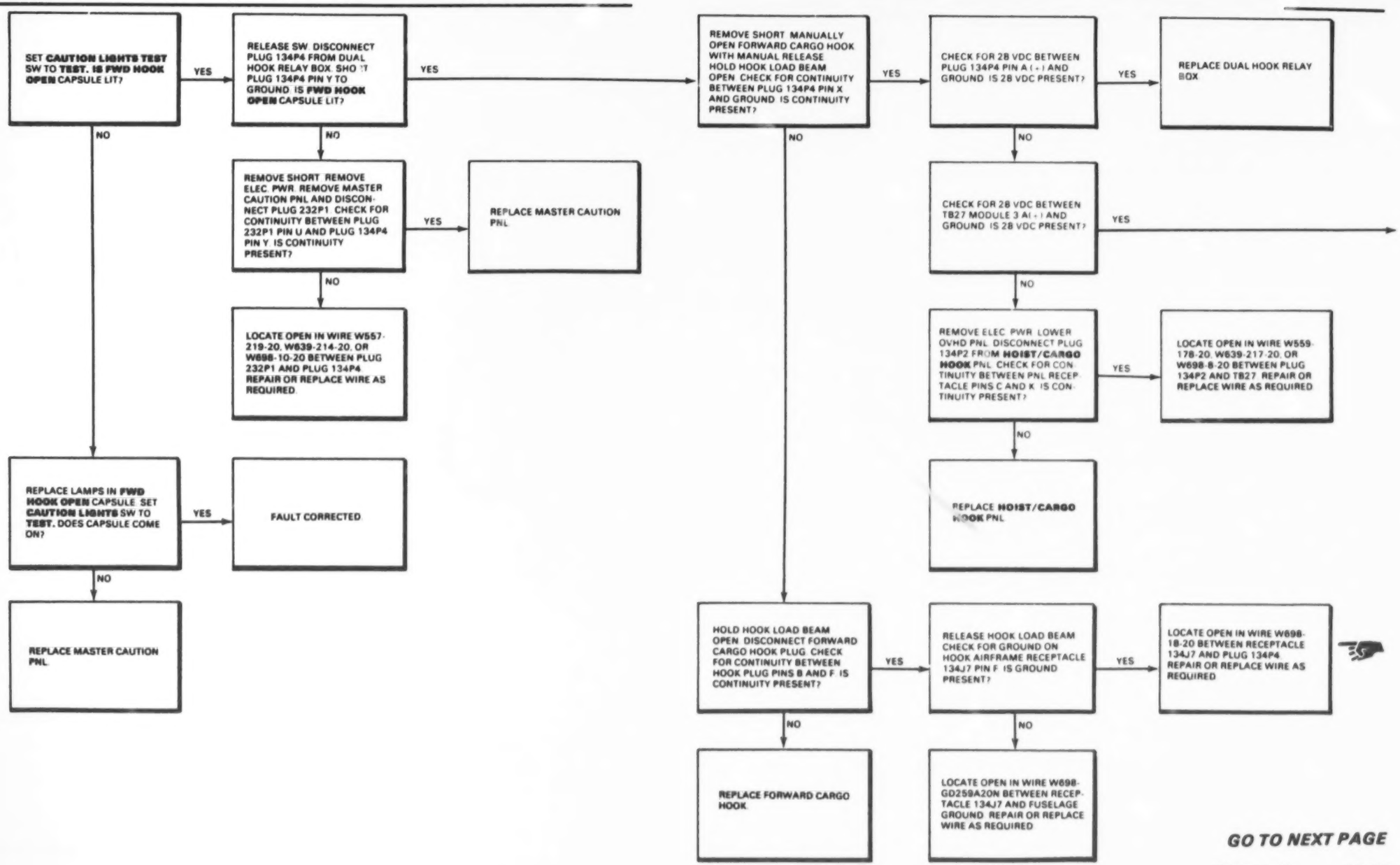
16-1.22 FWD HOOK OPEN CAPSULE DOES NOT COME ON WHEN FORWARD CARGO HOOK OPENS (Continued)


SET CAUTION LIGHTS TEST SW TO TEST. IS FWD HOOK OPEN CAPSULE LIT?
YES
NO
RELEASE SW. DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. SHORT PLUG 134P4 PIN Y TO GROUND. IS FWD HOOK OPEN CAPSULE LIT?
YES
NO
REMOVE SHORT. REMOVE ELEC. PWR. REMOVE MASTER CAUTION PNL AND DISCONNECT PLUG 232P1. CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN U AND PLUG 134P4 PIN Y. IS CONTINUITY PRESENT?
YES
REPLACE MASTER CAUTION PNL
NO
LOCATE OPEN IN WIRE W557-219-20, W639-214-20, OR W698-10-20 BETWEEN PLUG 232P1 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE LAMPS IN FWD HOOK OPEN CAPSULE. SET CAUTION LIGHTS SW TO TEST. DOES CAPSULE COME ON?
YES
FAULT CORRECTED
NO
REPLACE MASTER CAUTION PNL.
REMOVE SHORT. MANUALLY OPEN FORWARD CARGO HOOK WITH MANUAL RELEASE. HOLD HOOK LOAD BEAM OPEN. CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN X AND GROUND. IS CONTINUITY PRESENT?
YES
NO
CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX
NO
CHECK FOR 28 VDC BETWEEN TB27 MODULE 3 A(+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PNL RECEPTACLE PINS C AND K. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-178-20, W639-217-20, OR W698-8-20 BETWEEN PLUG 134P2 AND TB27. REPAIR OR REPLACE WIRE AS REQUIRED
NO
REPLACE HOIST/CARGO HOOK PNL
HOLD HOOK LOAD BEAM OPEN. DISCONNECT FORWARD CARGO HOOK PLUG. CHECK FOR CONTINUITY BETWEEN HOOK PLUG PINS B AND F. IS CONTINUITY PRESENT?
YES
NO
REPLACE FORWARD CARGO HOOK.
RELEASE HOOK LOAD BEAM. CHECK FOR GROUND ON HOOK AIRFRAME RECEPTACLE 134J7 PIN F. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W698-GD259A20N BETWEEN RECEPTACLE 134J7 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
LOCATE OPEN IN WIRE W698-18-20 BETWEEN RECEPTACLE 134J7 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED

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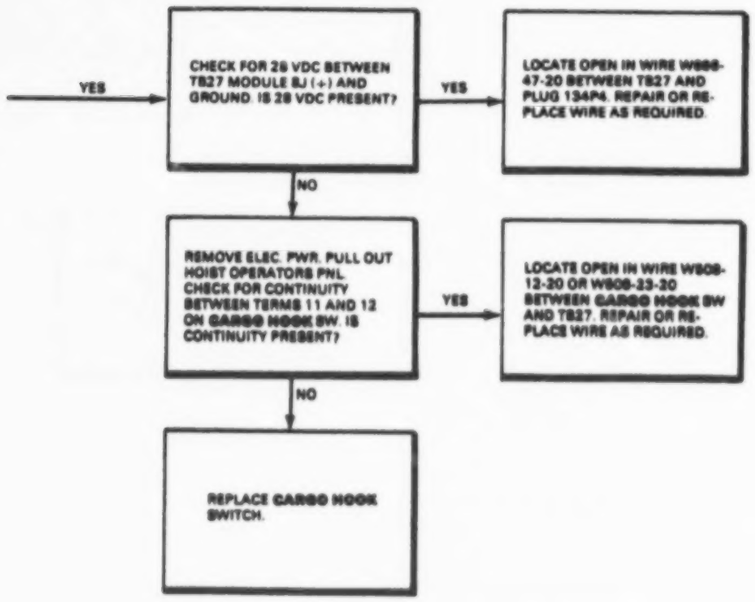
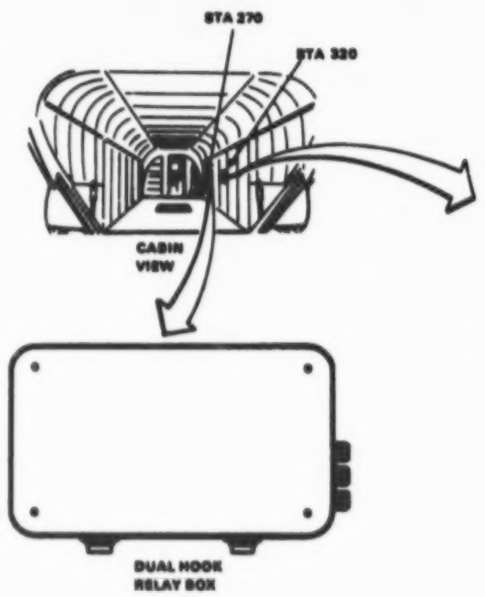
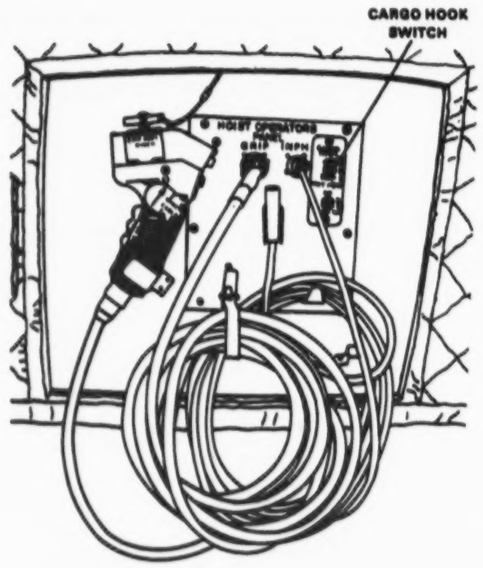
16-1.22 FWD HOOK OPEN CAPSULE DOES NOT COME ON WHEN FORWARD CARGO HOOK OPENS (Continued)


YES
CHECK FOR 28 VDC BETWEEN TB27 MODULE 8J (+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W666-47-20 BETWEEN TB27 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE ELEC. PWR. PULL OUT HOIST OPERATORS PNL. CHECK FOR CONTINUITY BETWEEN TERMS 11 AND 12 ON CARGO HOOK SW. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W609-13-20 OR W609-23-20 BETWEEN CARGO HOOK SW AND TB27. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CARGO HOOK SWITCH.





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END OF TASK

16-1.20 RELEASE SW FAIL LIGHT OR GROUND RELAY ACTIVATE LIGHT NOT ON WHEN HOIST OPERATOR'S CARGO HOOK RELEASE SWITCH PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

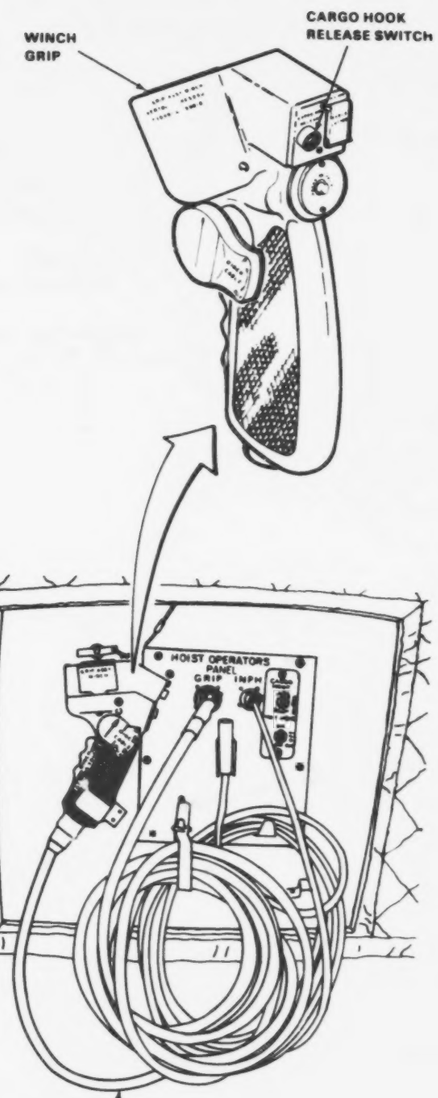
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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GO TO NEXT PAGE

16-1.23 CENTER CARGO HOOK DOES NOT OPEN

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

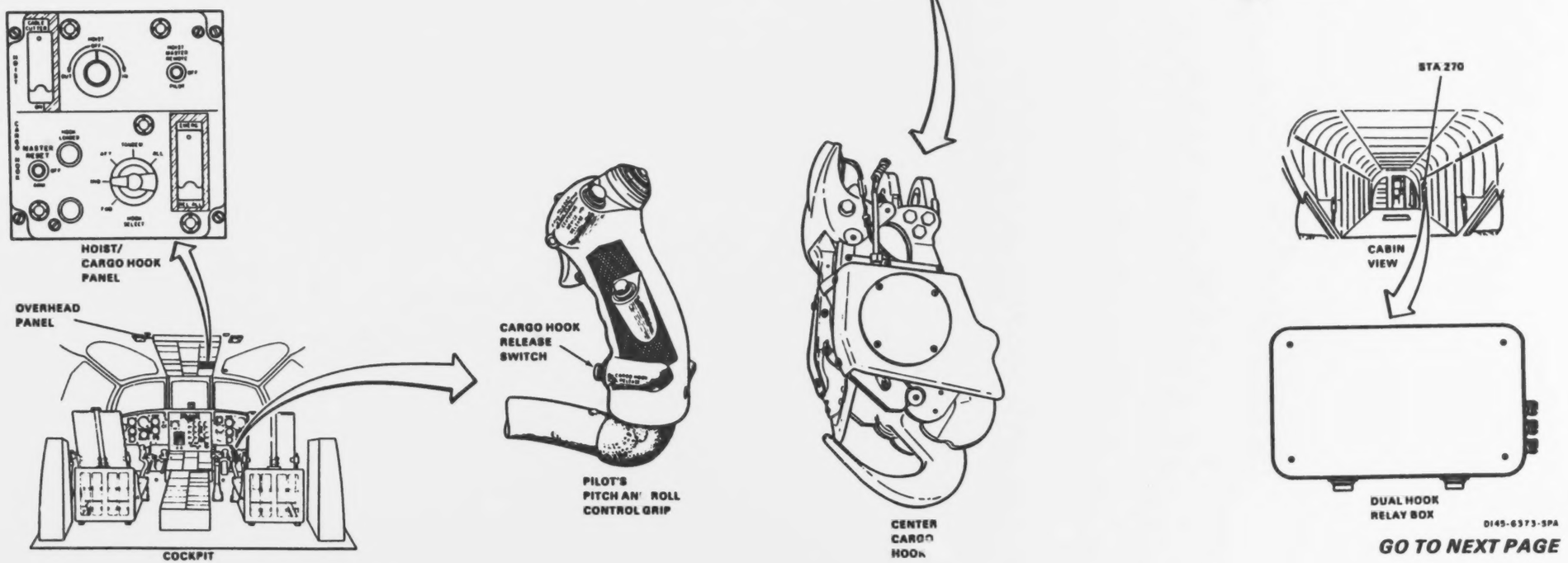
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power On



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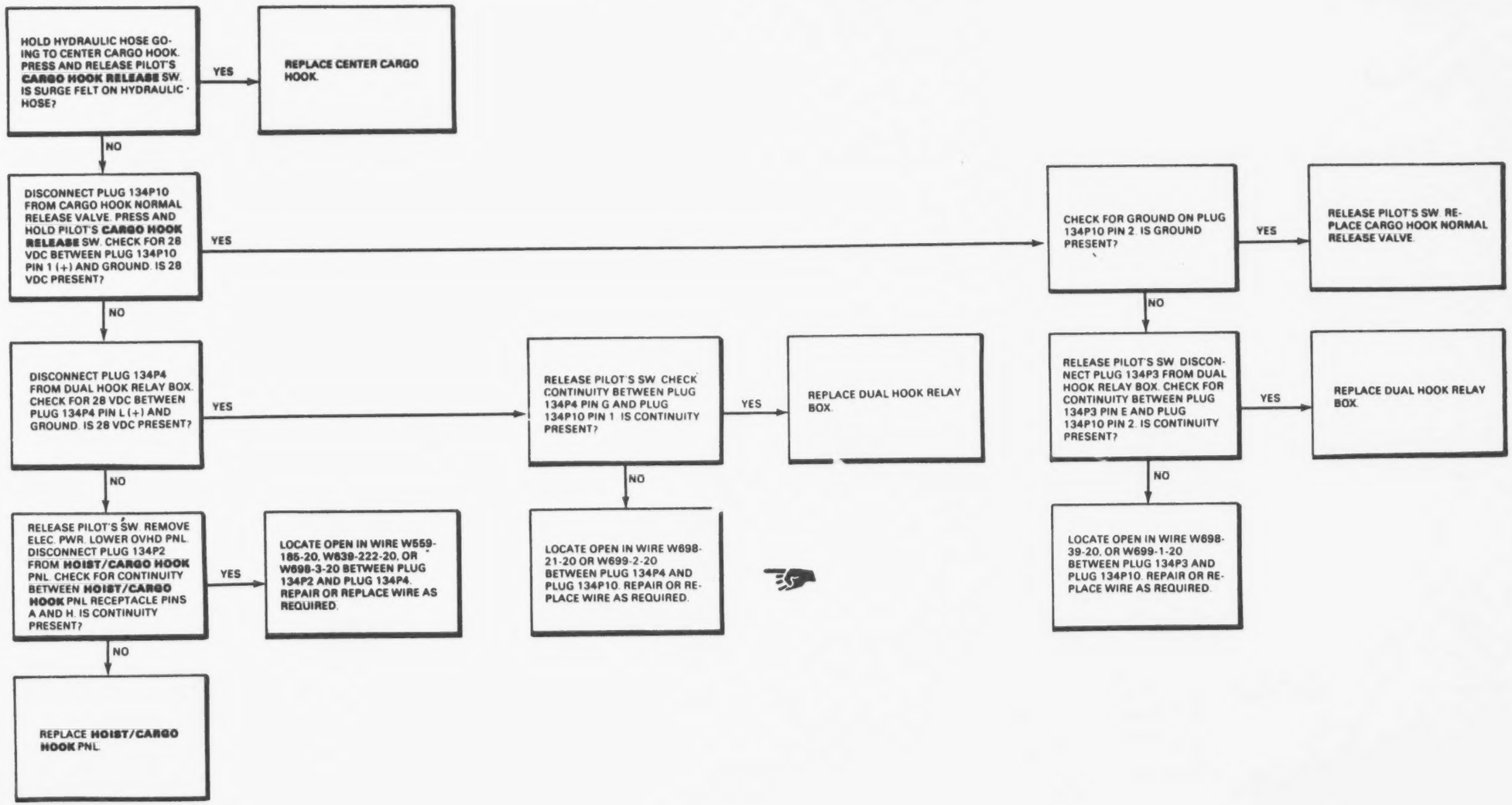
16-1.23 CENTER CARGO HOOK DOES NOT OPEN (Continued)


HOLD HYDRAULIC HOSE GOING TO CENTER CARGO HOOK. PRESS AND RELEASE PILOT'S CARGO HOOK RELEASE SW. IS SURGE FELT ON HYDRAULIC HOSE?
YES
REPLACE CENTER CARGO HOOK.
NO
DISCONNECT PLUG 134P10 FROM CARGO HOOK NORMAL RELEASE VALVE. PRESS AND HOLD PILOT'S CARGO HOOK RELEASE SW. CHECK FOR 28 VDC BETWEEN PLUG 134P10 PIN 1 (+) AND GROUND. IS 28 VDC PRESENT?
YES
CHECK FOR GROUND ON PLUG 134P10 PIN 2. IS GROUND PRESENT?
YES
RELEASE PILOT'S SW. REPLACE CARGO HOOK NORMAL RELEASE VALVE.
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN L (+) AND GROUND. IS 28 VDC PRESENT?
YES
RELEASE PILOT'S SW. CHECK CONTINUITY BETWEEN PLUG 134P4 PIN G AND PLUG 134P10 PIN 1. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
RELEASE PILOT'S SW. DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P3 PIN E AND PLUG 134P10 PIN 2. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
RELEASE PILOT'S SW. REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN HOIST/CARGO HOOK PNL RECEPTACLE PINS A AND H. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-185-20, W639-222-20, OR W698-3-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.
NO
LOCATE OPEN IN WIRE W698-21-20 OR W699-2-20 BETWEEN PLUG 134P4 AND PLUG 134P10. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W698-39-20, OR W699-1-20 BETWEEN PLUG 134P3 AND PLUG 134P10. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-1.24 MID HOOK OPEN CAPSULE DOES NOT COME ON WHEN CENTER CARGO HOOK OPENS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

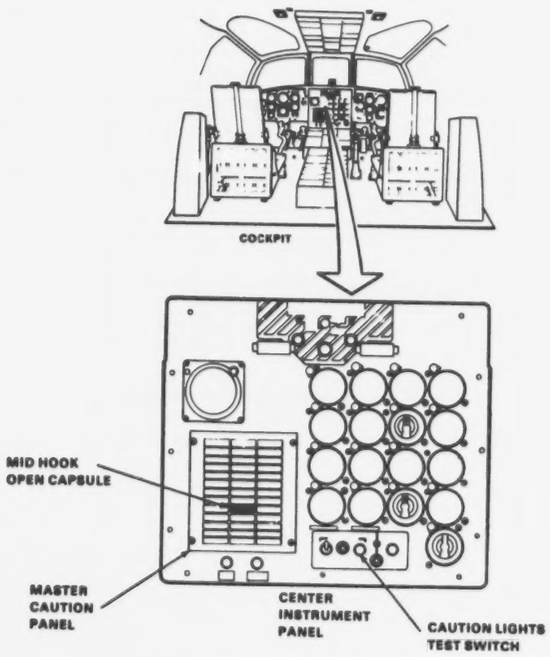
Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Multimeter

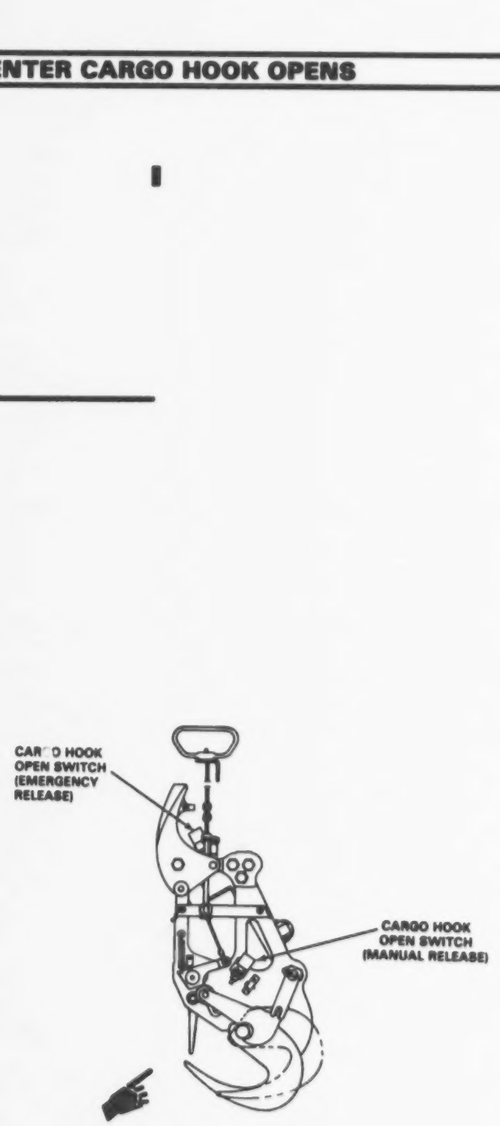
Materials:
None

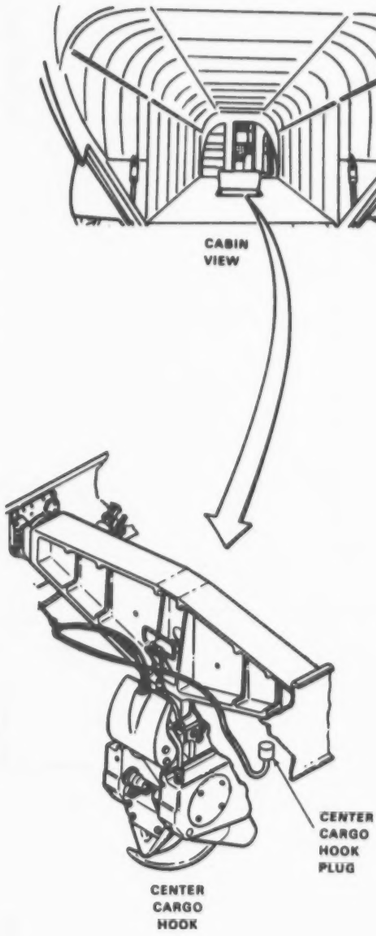
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off







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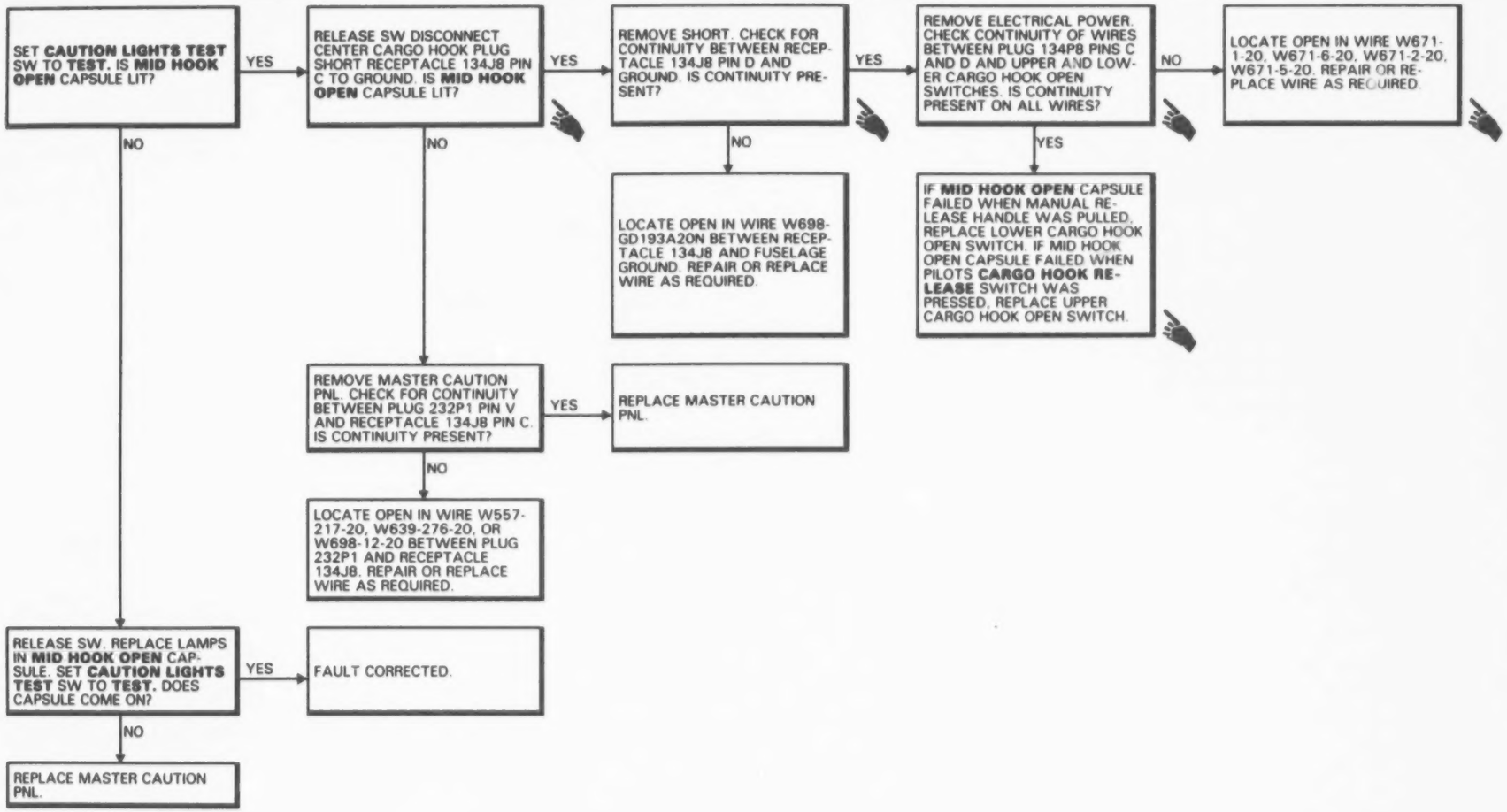

SET CAUTION LIGHTS TEST SW TO TEST. IS MID HOOK OPEN CAPSULE LIT?
YES
RELEASE SW DISCONNECT CENTER CARGO HOOK PLUG SHORT RECEPTACLE 134J8 PIN C TO GROUND. IS MID HOOK OPEN CAPSULE LIT?
YES
REMOVE SHORT. CHECK FOR CONTINUITY BETWEEN RECEPTACLE 134J8 PIN D AND GROUND. IS CONTINUITY PRESENT?
YES
REMOVE ELECTRICAL POWER. CHECK CONTINUITY OF WIRES BETWEEN PLUG 134P8 PINS C AND D AND UPPER AND LOWER CARGO HOOK OPEN SWITCHES. IS CONTINUITY PRESENT ON ALL WIRES?
NO
LOCATE OPEN IN WIRE W671-1-20, W671-6-20, W671-2-20, W671-5-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W698-GD193A20N BETWEEN RECEPTACLE 134J8 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
IF MID HOOK OPEN CAPSULE FAILED WHEN MANUAL RELEASE HANDLE WAS PULLED, REPLACE LOWER CARGO HOOK OPEN SWITCH. IF MID HOOK OPEN CAPSULE FAILED WHEN PILOTS CARGO HOOK RELEASE SWITCH WAS PRESSED, REPLACE UPPER CARGO HOOK OPEN SWITCH.
NO
REMOVE MASTER CAUTION PNL. CHECK FOR CONTINUITY BETWEEN PLUG 232P1 PIN V AND RECEPTACLE 134J8 PIN C. IS CONTINUITY PRESENT?
YES
REPLACE MASTER CAUTION PNL.
NO
LOCATE OPEN IN WIRE W557-217-20, W639-276-20, OR W698-12-20 BETWEEN PLUG 232P1 AND RECEPTACLE 134J8. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
RELEASE SW. REPLACE LAMPS IN MID HOOK OPEN CAPSULE. SET CAUTION LIGHTS TEST SW TO TEST. DOES CAPSULE COME ON?
YES
FAULT CORRECTED.
NO
REPLACE MASTER CAUTION PNL.

END OF TASK

16-1.25 AFT CARGO HOOK DOES NOT OPEN

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

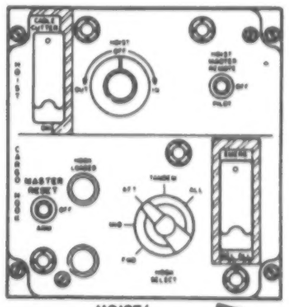
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

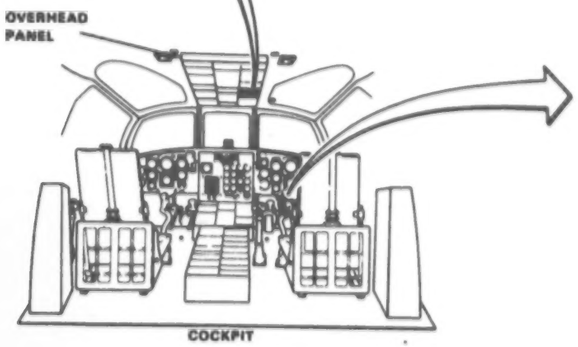
Materials:
None

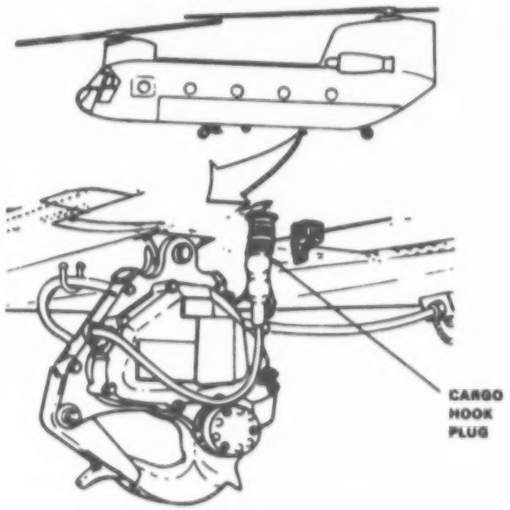
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

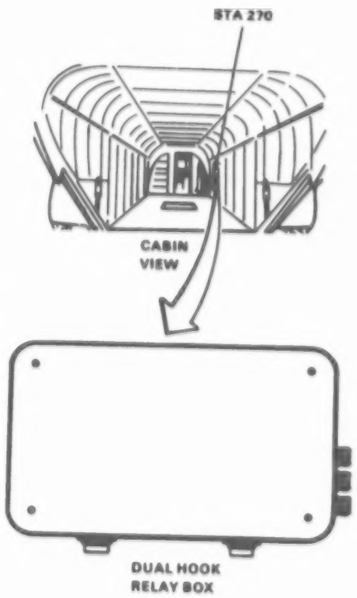
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off









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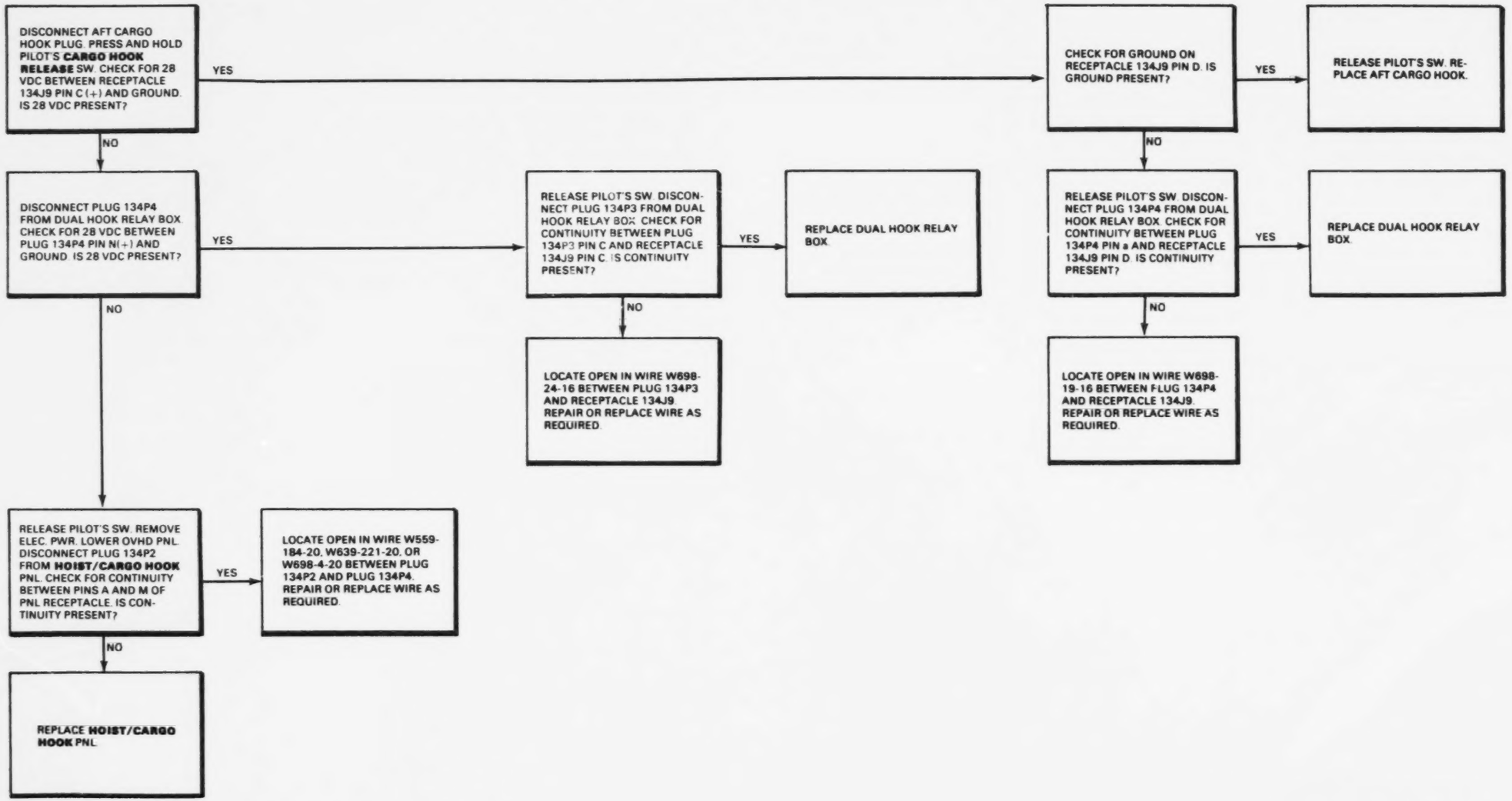
16-1.25 AFT CARGO HOOK DOES NOT OPEN (Continued)


DISCONNECT AFT CARGO HOOK PLUG. PRESS AND HOLD PILOT'S CARGO HOOK RELEASE SW. CHECK FOR 28 VDC BETWEEN RECEPTACLE 134J9 PIN C (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
CHECK FOR GROUND ON RECEPTACLE 134J9 PIN D. IS GROUND PRESENT?
YES
RELEASE PILOT'S SW. REPLACE AFT CARGO HOOK.
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR 28 VDC BETWEEN PLUG 134P4 PIN N(+) AND GROUND. IS 28 VDC PRESENT?
YES
RELEASE PILOT'S SW. DISCONNECT PLUG 134P3 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P3 PIN C AND RECEPTACLE 134J9 PIN C. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
LOCATE OPEN IN WIRE W698-24-16 BETWEEN PLUG 134P3 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED.
RELEASE PILOT'S SW. DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN a AND RECEPTACLE 134J9 PIN D. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX.
NO
LOCATE OPEN IN WIRE W698-19-16 BETWEEN PLUG 134P4 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED.
RELEASE PILOT'S SW. REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PINS A AND M OF PNL RECEPTACLE. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-184-20, W639-221-20, OR W698-4-20 BETWEEN PLUG 134P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.

END OF TASK

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16-1.26 AFT HOOK OPEN CAPSULE DOES NOT COME ON WHEN AFT CARGO HOOK OPENS

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

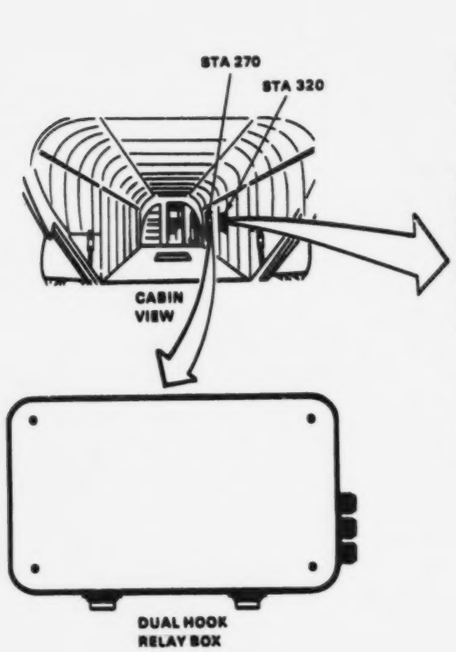
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-323-4915
Multimeter

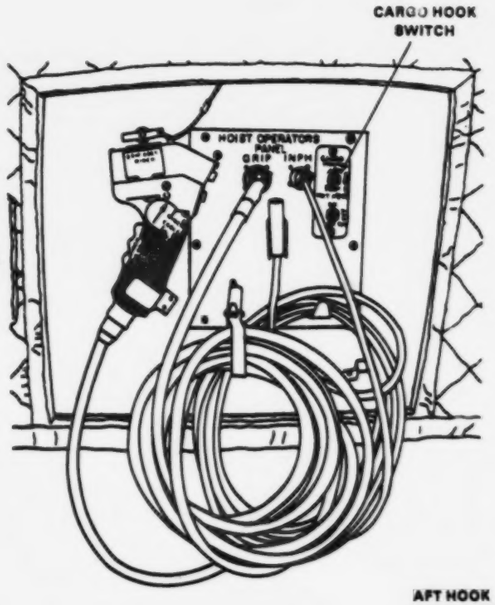
Materials:
None

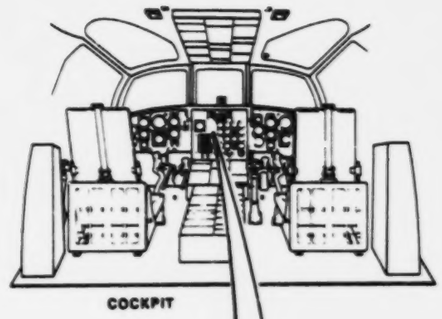
Personnel Required:
68F20 Aircraft Electrician

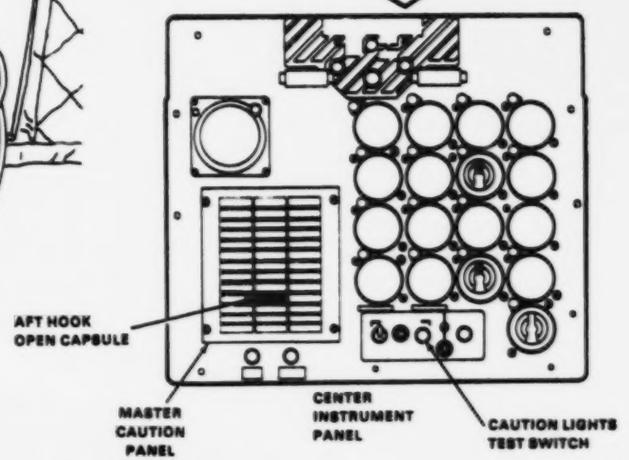
References:
TM 55-1520-240-23

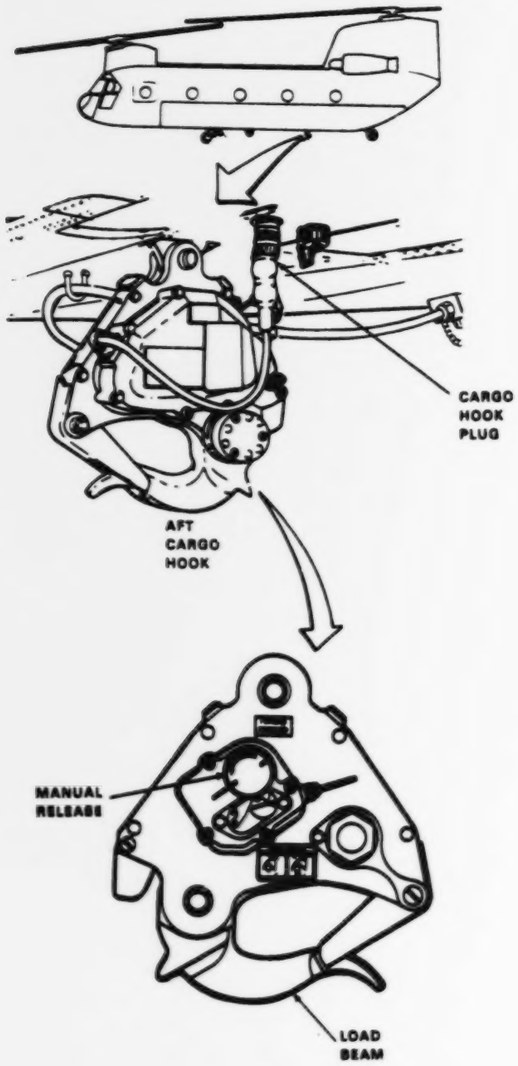
Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off











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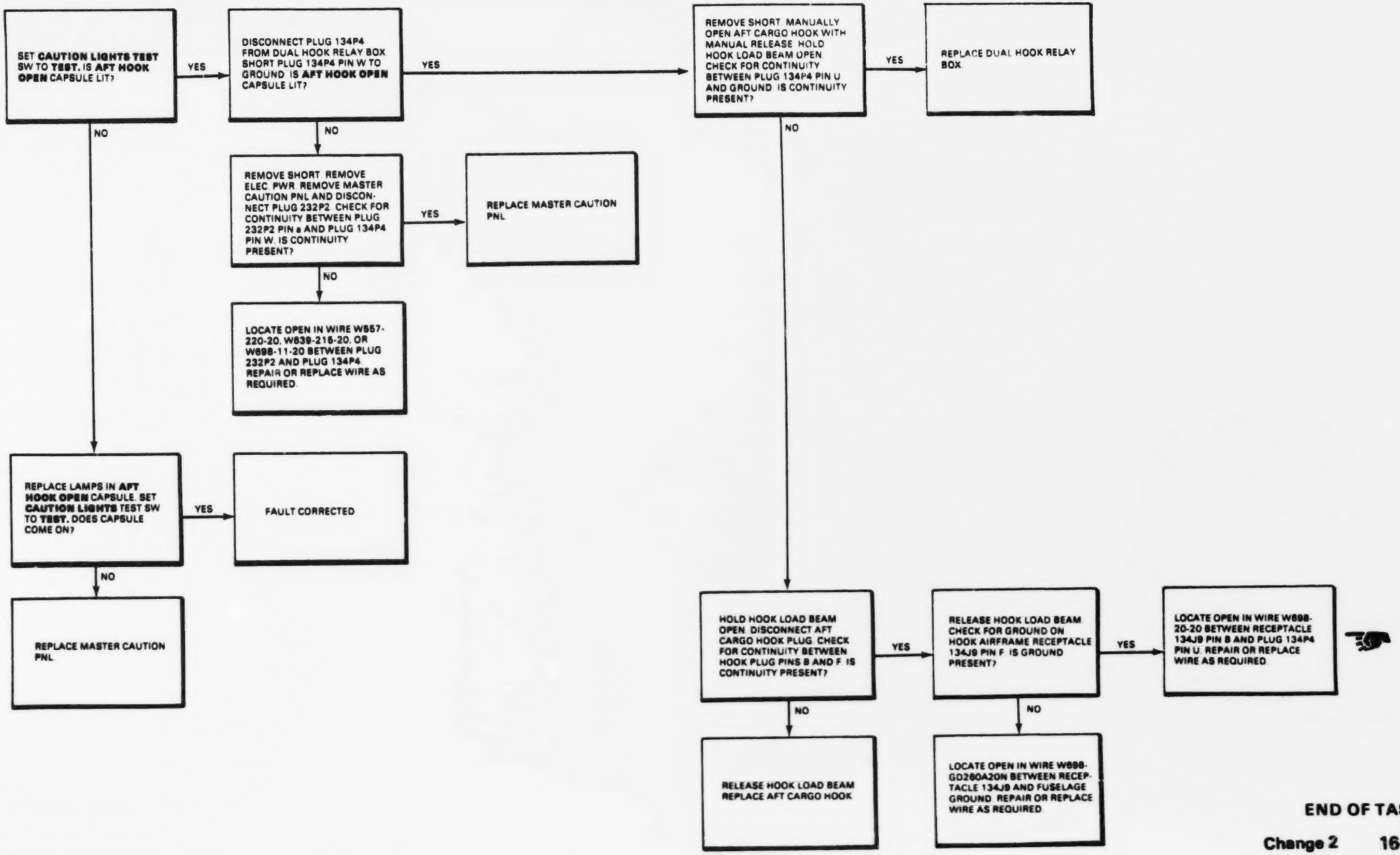
16-1.26 AFT HOOK OPEN CAPSULE DOES NOT COME ON WHEN AFT CARGO HOOK OPENS (Continued)


SET CAUTION LIGHTS TEST SW TO TEST. IS AFT HOOK OPEN CAPSULE LIT?
YES
NO
DISCONNECT PLUG 134P4 FROM DUAL HOOK RELAY BOX. SHORT PLUG 134P4 PIN W TO GROUND. IS AFT HOOK OPEN CAPSULE LIT?
YES
NO
REMOVE SHORT. REMOVE ELEC PWR. REMOVE MASTER CAUTION PNL AND DISCONNECT PLUG 232P2. CHECK FOR CONTINUITY BETWEEN PLUG 232P2 PIN a AND PLUG 134P4 PIN W. IS CONTINUITY PRESENT?
YES
REPLACE MASTER CAUTION PNL
NO
LOCATE OPEN IN WIRE W557-220-20, W839-215-20, OR W698-11-20 BETWEEN PLUG 232P2 AND PLUG 134P4. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE LAMPS IN AFT HOOK OPEN CAPSULE. SET CAUTION LIGHTS TEST SW TO TEST. DOES CAPSULE COME ON?
YES
FAULT CORRECTED
NO
REPLACE MASTER CAUTION PNL
REMOVE SHORT. MANUALLY OPEN AFT CARGO HOOK WITH MANUAL RELEASE. HOLD HOOK LOAD BEAM OPEN. CHECK FOR CONTINUITY BETWEEN PLUG 134P4 PIN U AND GROUND. IS CONTINUITY PRESENT?
YES
REPLACE DUAL HOOK RELAY BOX
NO
HOLD HOOK LOAD BEAM OPEN. DISCONNECT AFT CARGO HOOK PLUG. CHECK FOR CONTINUITY BETWEEN HOOK PLUG PINS B AND F. IS CONTINUITY PRESENT?
YES
NO
RELEASE HOOK LOAD BEAM. REPLACE AFT CARGO HOOK
RELEASE HOOK LOAD BEAM. CHECK FOR GROUND ON HOOK AIRFRAME RECEPTACLE 134J9 PIN F. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W698-GD260A20N BETWEEN RECEPTACLE 134J9 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED
LOCATE OPEN IN WIRE W698-20-20 BETWEEN RECEPTACLE 134J9 PIN B AND PLUG 134P4 PIN U. REPAIR OR REPLACE WIRE AS REQUIRED

END OF TASK

16-1.27 CARGO HOOK OR HOOKS DO NOT RELEASE WHEN EMERG SWITCH SET TO REL ALL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

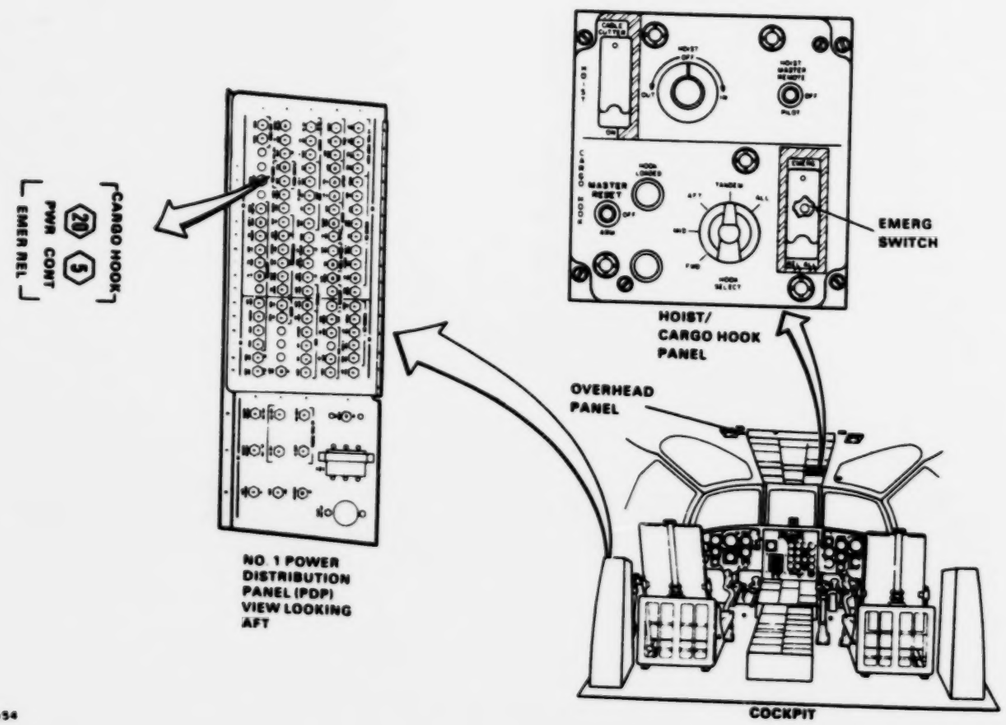
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

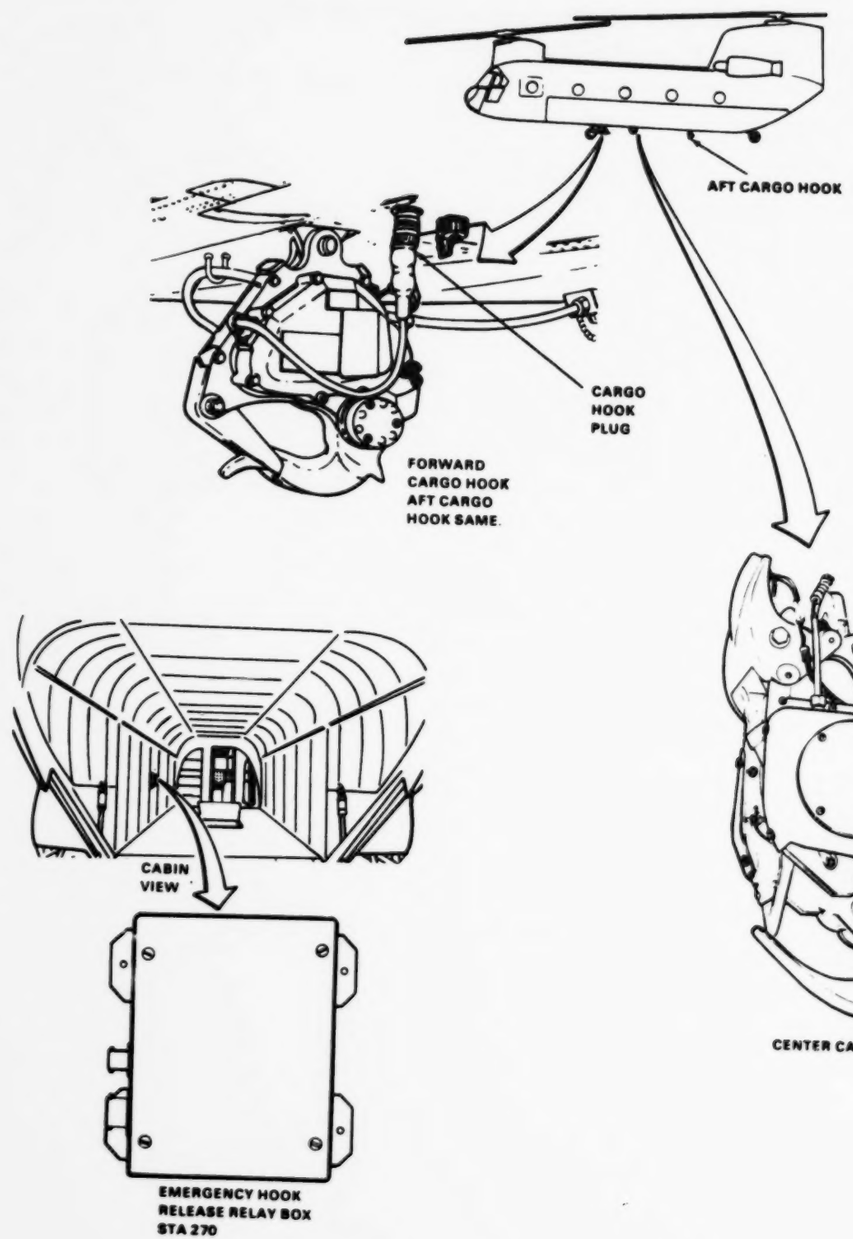
Materials:
None

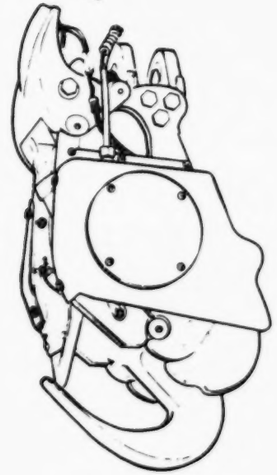
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off




AFT CARGO HOOK
CARGO HOOK PLUG
FORWARD CARGO HOOK AFT CARGO HOOK SAME.
CABIN VIEW
EMERGENCY HOOK RELEASE RELAY BOX STA 270



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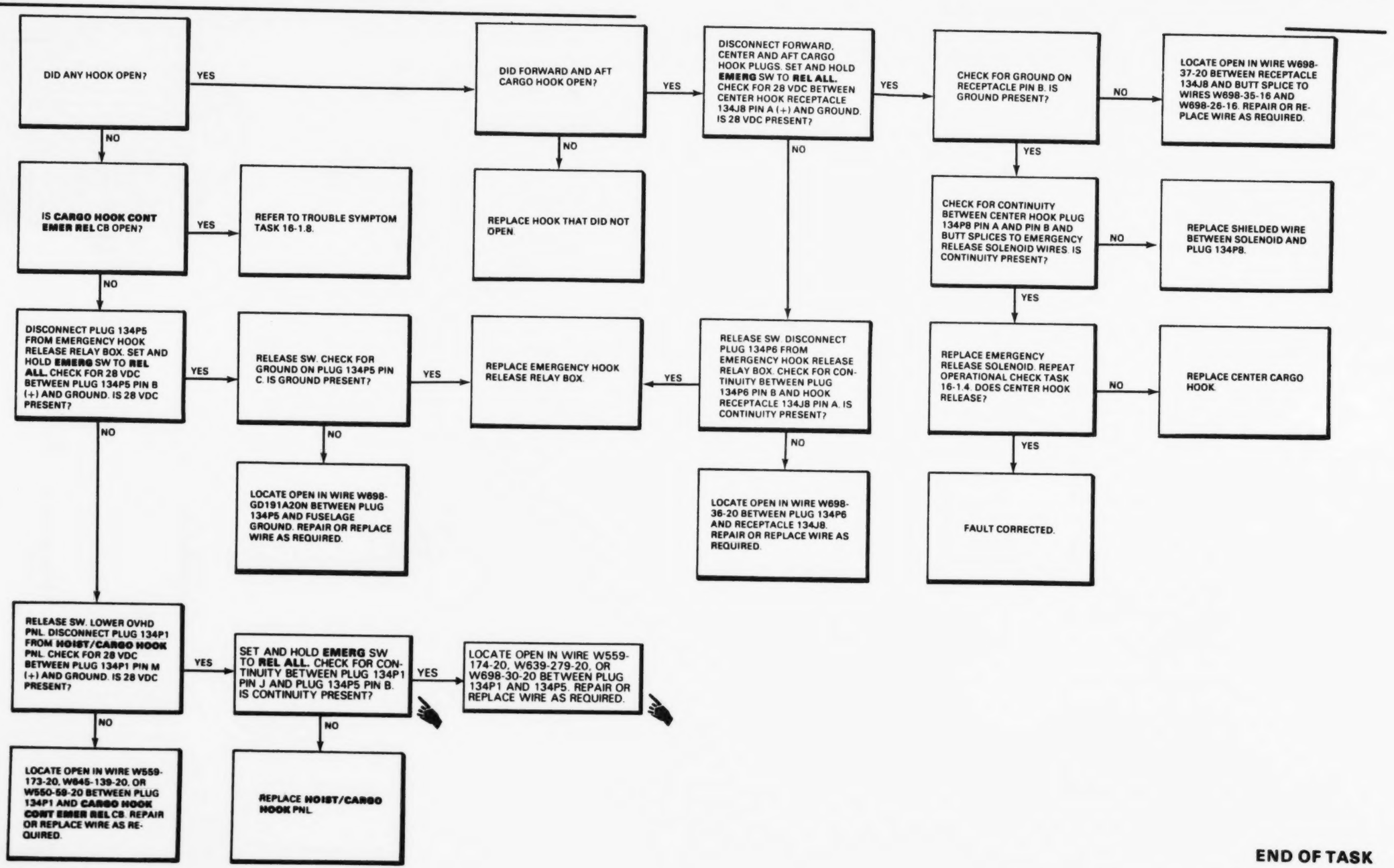
16-1.27 CARGO HOOK OR HOOKS DO NOT RELEASE WHEN EMERG SWITCH SET TO REL ALL (Continued)


DID ANY HOOK OPEN?
YES
NO
DID FORWARD AND AFT CARGO HOOK OPEN?
YES
NO
REPLACE HOOK THAT DID NOT OPEN.
DISCONNECT FORWARD, CENTER AND AFT CARGO HOOK PLUGS. SET AND HOLD EMERG SW TO REL ALL. CHECK FOR 28 VDC BETWEEN CENTER HOOK RECEPTACLE 134J8 PIN A (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
CHECK FOR GROUND ON RECEPTACLE PIN B. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W698-37-20 BETWEEN RECEPTACLE 134J8 AND BUTT SPLICE TO WIRES W698-35-16 AND W698-26-16. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR CONTINUITY BETWEEN CENTER HOOK PLUG 134P8 PIN A AND PIN B AND BUTT SPLICES TO EMERGENCY RELEASE SOLENOID WIRES. IS CONTINUITY PRESENT?
YES
NO
REPLACE SHIELDED WIRE BETWEEN SOLENOID AND PLUG 134P8.
REPLACE EMERGENCY RELEASE SOLENOID. REPEAT OPERATIONAL CHECK TASK 16-1.4. DOES CENTER HOOK RELEASE?
YES
NO
REPLACE CENTER CARGO HOOK.
FAULT CORRECTED.
RELEASE SW. DISCONNECT PLUG 134P6 FROM EMERGENCY HOOK RELEASE RELAY BOX. CHECK FOR CONTINUITY BETWEEN PLUG 134P6 PIN B AND HOOK RECEPTACLE 134J8 PIN A. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W698-36-20 BETWEEN PLUG 134P6 AND RECEPTACLE 134J8. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE EMERGENCY HOOK RELEASE RELAY BOX.
RELEASE SW. CHECK FOR GROUND ON PLUG 134P5 PIN C. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W698-GD191A20N BETWEEN PLUG 134P5 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
IS CARGO HOOK CONT EMER REL CB OPEN?
YES
NO
REFER TO TROUBLE SYMPTOM TASK 16-1.8.
DISCONNECT PLUG 134P5 FROM EMERGENCY HOOK RELEASE RELAY BOX. SET AND HOLD EMERG SW TO REL ALL. CHECK FOR 28 VDC BETWEEN PLUG 134P5 PIN B (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
RELEASE SW. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. CHECK FOR 28 VDC BETWEEN PLUG 134P1 PIN M (+) AND GROUND. IS 28 VDC PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-173-20, W645-139-20, OR W550-59-20 BETWEEN PLUG 134P1 AND CARGO HOOK CONT EMER REL CB. REPAIR OR REPLACE WIRE AS REQUIRED.
SET AND HOLD EMERG SW TO REL ALL. CHECK FOR CONTINUITY BETWEEN PLUG 134P1 PIN J AND PLUG 134P5 PIN B. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-174-20, W639-279-20, OR W698-30-20 BETWEEN PLUG 134P1 AND 134P5. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE HOIST/CARGO HOOK PNL.

END OF TASK

16-1.28 CENTER CARGO HOOK DOES NOT STAY OPEN FOR 10 TO 14 SECONDS AFTER EMERG SWITCH RELEASED FROM REL ALL

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

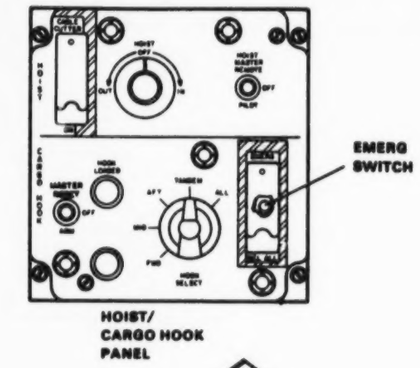
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

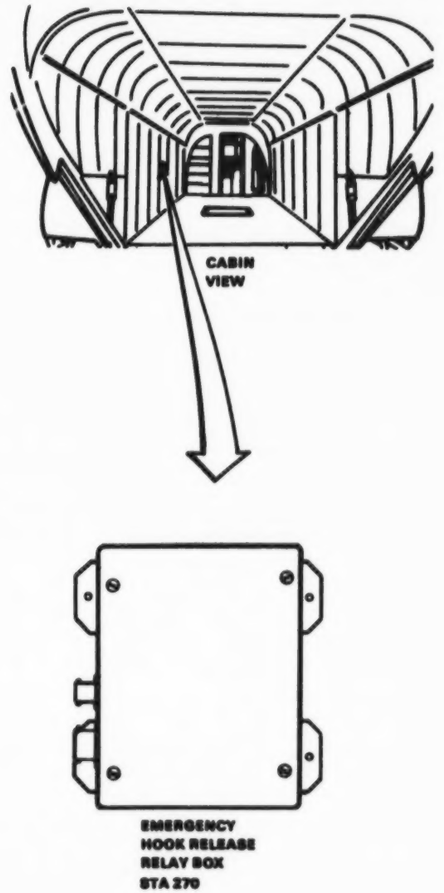
Materials:
None

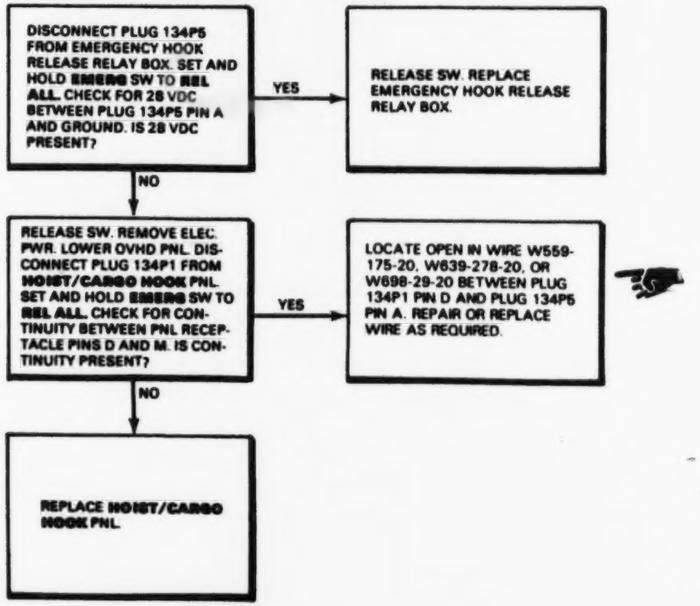
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off






DISCONNECT PLUG 134P5 FROM EMERGENCY HOOK RELEASE RELAY BOX. SET AND HOLD EMERG SW TO REL ALL. CHECK FOR 28 VDC BETWEEN PLUG 134P5 PIN A AND GROUND. IS 28 VDC PRESENT?
YES
RELEASE SW. REPLACE EMERGENCY HOOK RELEASE RELAY BOX.
NO
RELEASE SW. REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P1 FROM HOIST/CARGO HOOK PNL. SET AND HOLD EMERG SW TO REL ALL. CHECK FOR CONTINUITY BETWEEN PNL RECEPTACLE PINS D AND M. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W559-175-20, W639-278-20, OR W698-29-20 BETWEEN PLUG 134P1 PIN D AND PLUG 134P5 PIN A. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE HOIST/CARGO HOOK PNL.

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END OF TASK

16-1.29 FORWARD CENTER OR AFT CARGO HOOK DOES NOT OPEN WHEN TRIPLE/TANDEM HOOK OR CENTER HOOK RELEASE LEVER IS PULLED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

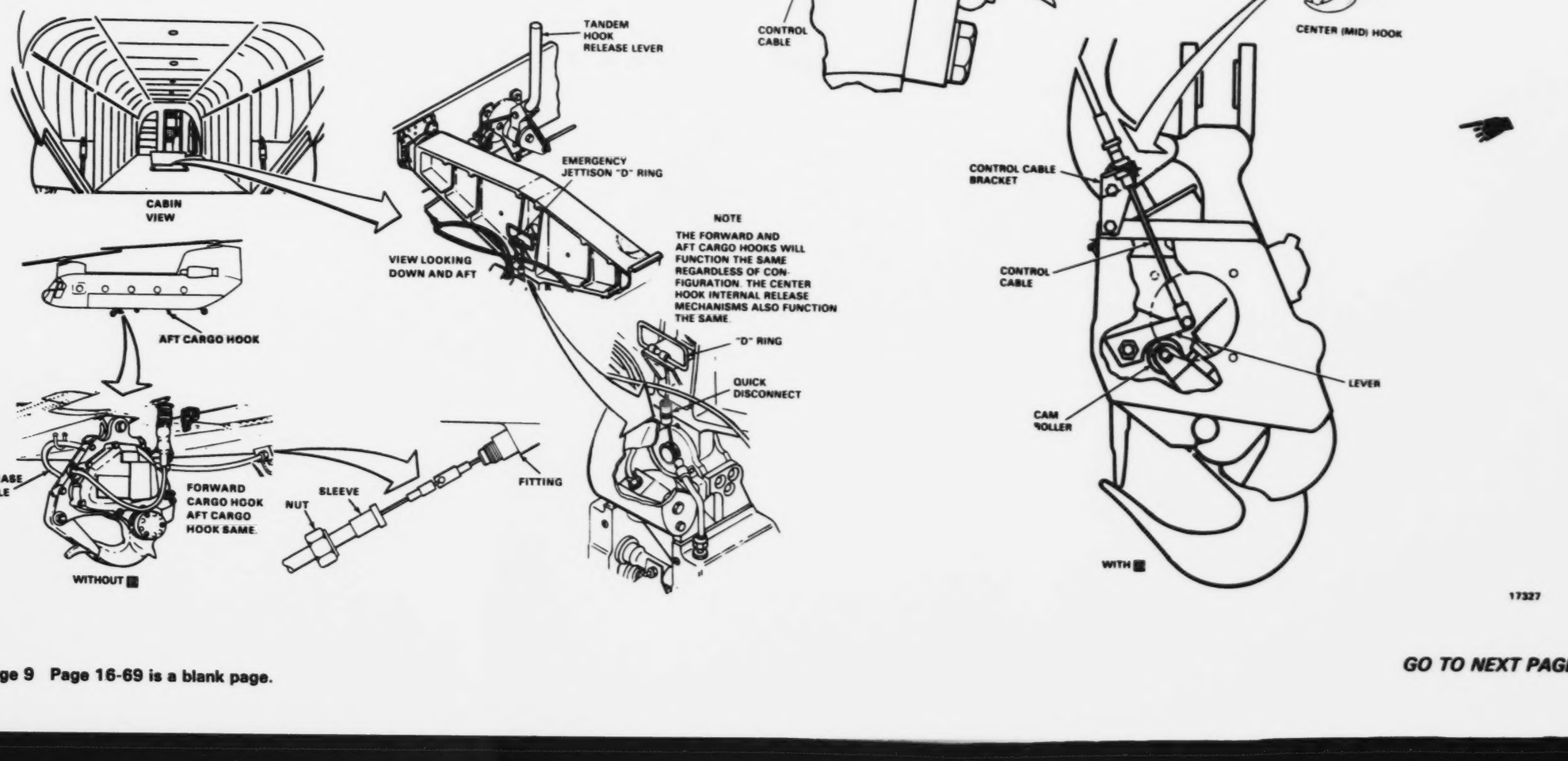
Tools:
Electrical Repairer Tool Kit, NSN 5180-00-323-4915
Aircraft Mechanic Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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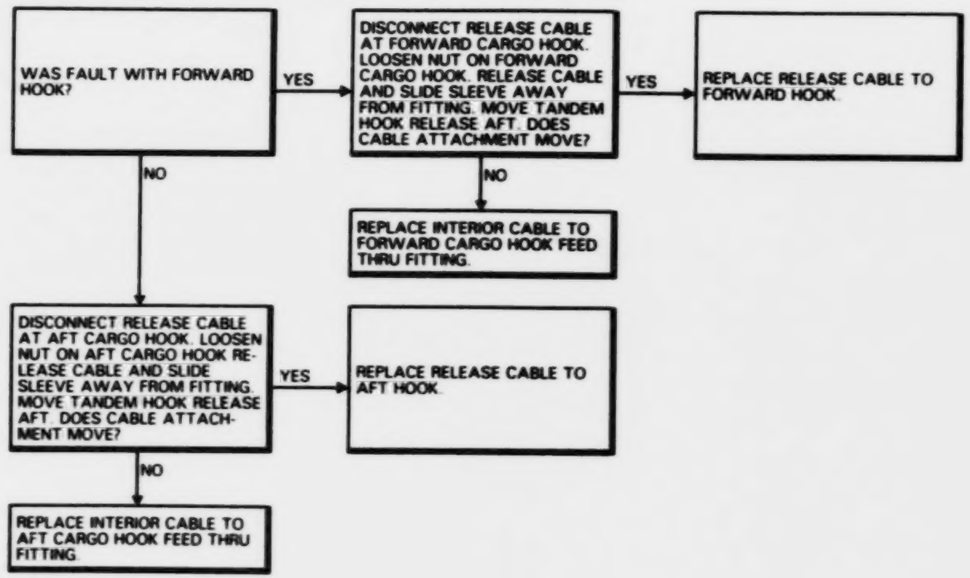
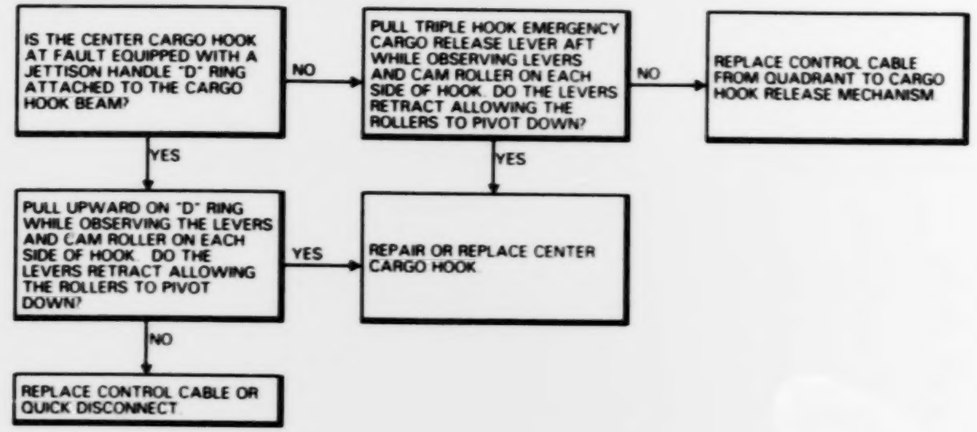
16-1.29 FORWARD CENTER OR AFT CARGO HOOK DOES NOT OPEN WHEN TRIPLE/TANDEM HOOK OR CENTER HOOK RELEASE LEVER IS PULLED (Continued)

FORWARD OR AFT CARGO HOOK DOES NOT OPEN


WAS FAULT WITH FORWARD HOOK?
YES
DISCONNECT RELEASE CABLE AT FORWARD CARGO HOOK. LOOSEN NUT ON FORWARD CARGO HOOK. RELEASE CABLE AND SLIDE SLEEVE AWAY FROM FITTING. MOVE TANDEM HOOK RELEASE AFT. DOES CABLE ATTACHMENT MOVE?
YES
REPLACE RELEASE CABLE TO FORWARD HOOK.
NO
REPLACE INTERIOR CABLE TO FORWARD CARGO HOOK FEED THRU FITTING.
NO
DISCONNECT RELEASE CABLE AT AFT CARGO HOOK. LOOSEN NUT ON AFT CARGO HOOK RELEASE CABLE AND SLIDE SLEEVE AWAY FROM FITTING. MOVE TANDEM HOOK RELEASE AFT. DOES CABLE ATTACHMENT MOVE?
YES
REPLACE RELEASE CABLE TO AFT HOOK.
NO
REPLACE INTERIOR CABLE TO AFT CARGO HOOK FEED THRU FITTING.

CENTER CARGO HOOK DOES NOT OPEN


IS THE CENTER CARGO HOOK AT FAULT EQUIPPED WITH A JETTISON HANDLE "D" RING ATTACHED TO THE CARGO HOOK BEAM?
NO
PULL TRIPLE HOOK EMERGENCY CARGO RELEASE LEVER AFT WHILE OBSERVING LEVERS AND CAM ROLLER ON EACH SIDE OF HOOK. DO THE LEVERS RETRACT ALLOWING THE ROLLERS TO PIVOT DOWN?
NO
REPLACE CONTROL CABLE FROM QUADRANT TO CARGO HOOK RELEASE MECHANISM
YES
REPAIR OR REPLACE CENTER CARGO HOOK.
YES
PULL UPWARD ON "D" RING WHILE OBSERVING THE LEVERS AND CAM ROLLER ON EACH SIDE OF HOOK. DO THE LEVERS RETRACT ALLOWING THE ROLLERS TO PIVOT DOWN?
YES
NO
REPLACE CONTROL CABLE OR QUICK DISCONNECT.

END OF TASK

16-1.30 HOOK LOADED LIGHT DOES NOT COME ON WHEN FORWARD OR AFT CARGO HOOK IS LOADED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

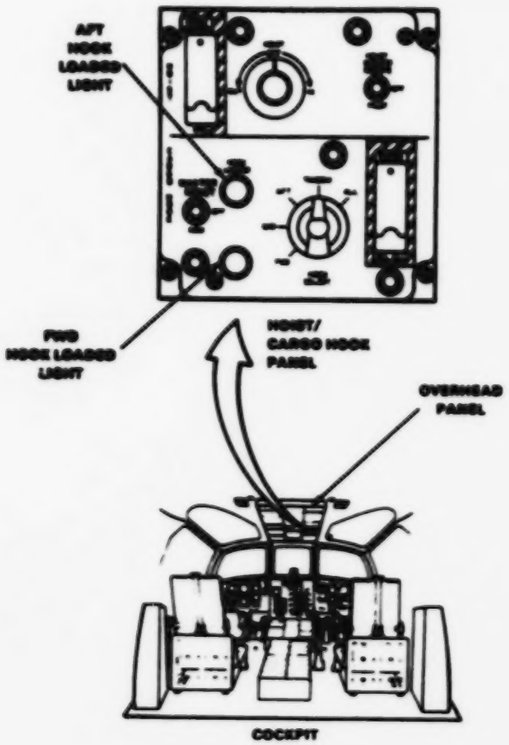
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

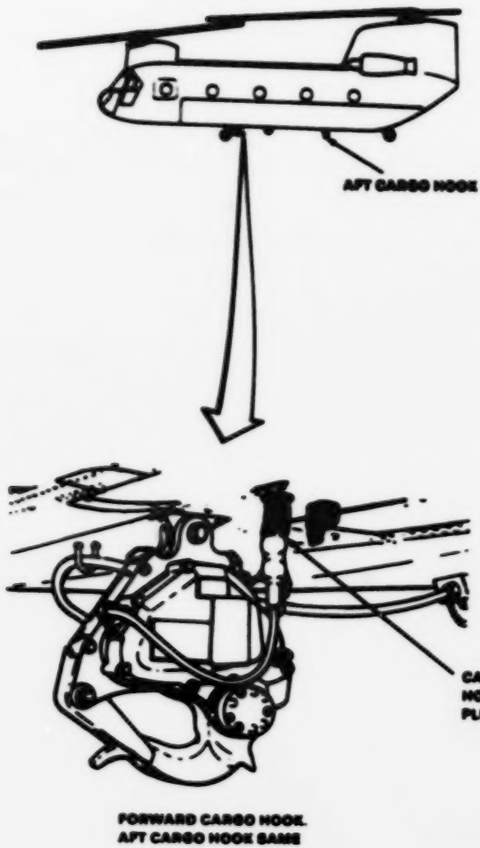
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off

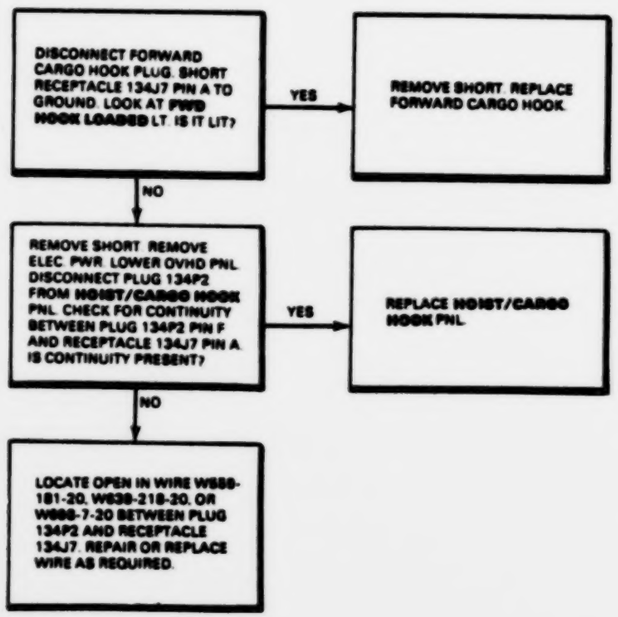




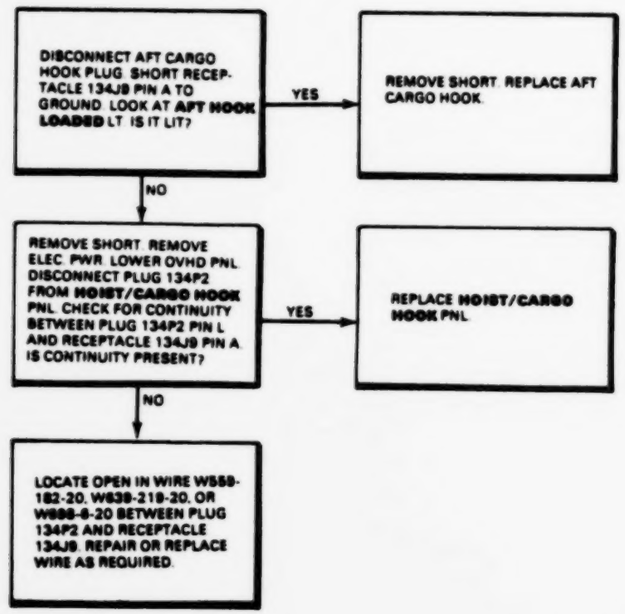
FORWARD CARGO HOOK
AFT CARGO HOOK SAME

16-1.30 HOOK LOADED LIGHT DOES NOT COME ON WHEN FORWARD OR AFT CARGO HOOK IS LOADED (Continued)

FWD HOOK LOADED LIGHT DOES NOT COME ON WHEN FORWARD CARGO HOOK IS LOADED

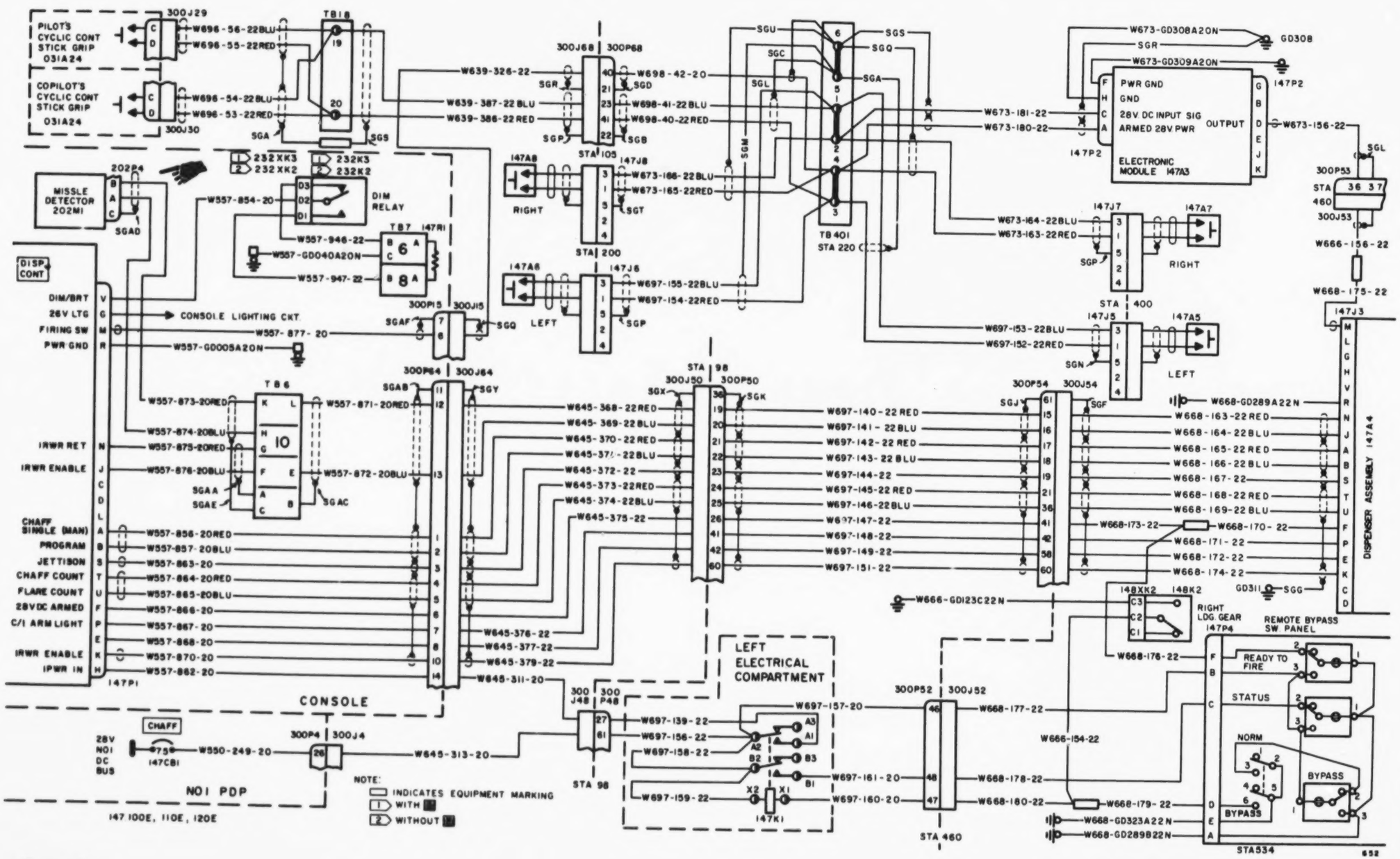

DISCONNECT FORWARD CARGO HOOK PLUG. SHORT RECEPTACLE 134J7 PIN A TO GROUND. LOOK AT FWD HOOK LOADED LT. IS IT LIT?
YES
REMOVE SHORT. REPLACE FORWARD CARGO HOOK.
NO
REMOVE SHORT. REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P2 PIN F AND RECEPTACLE 134J7 PIN A. IS CONTINUITY PRESENT?
YES
REPLACE HOIST/CARGO HOOK PNL.
NO
LOCATE OPEN IN WIRE W588-181-20, W638-218-20, OR W688-7-20 BETWEEN PLUG 134P2 AND RECEPTACLE 134J7. REPAIR OR REPLACE WIRE AS REQUIRED.

AFT HOOK LOADED LIGHT DOES NOT COME ON WHEN AFT CARGO HOOK IS LOADED


DISCONNECT AFT CARGO HOOK PLUG. SHORT RECEPTACLE 134J9 PIN A TO GROUND. LOOK AT AFT HOOK LOADED LT. IS IT LIT?
YES
REMOVE SHORT. REPLACE AFT CARGO HOOK.
NO
REMOVE SHORT. REMOVE ELEC. PWR. LOWER OVHD PNL. DISCONNECT PLUG 134P2 FROM HOIST/CARGO HOOK PNL. CHECK FOR CONTINUITY BETWEEN PLUG 134P2 PIN L AND RECEPTACLE 134J9 PIN A. IS CONTINUITY PRESENT?
YES
REPLACE HOIST/CARGO HOOK PNL.
NO
LOCATE OPEN IN WIRE W588-182-20, W638-219-20, OR W688-6-20 BETWEEN PLUG 134P2 AND RECEPTACLE 134J9. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-2 FLARE DISPENSER SYSTEM


PILOT'S CYCLIC CONT STICK GRIP 031A24
COPILOT'S CYCLIC CONT STICK GRIP 031A24
300J29
300J30
TB18
W696-56-22BLU
W696-55-22RED
W696-54-22BLU
W696-53-22RED
SGA
SGS
MISSLE DETECTOR 202MI
202P4
SGAD
DISP CONT
DIM/BRT
28V LTG
FIRING SW
PWR GND
CONSOLE LIGHTING CKT.
W557-877-20
W557-GD005A20N
IRWR RET
IRWR ENABLE
CHAFF SINGLE (MAN)
PROGRAM
JETTISON
CHAFF COUNT
FLARE COUNT
28VDC ARMED
C/I ARM LIGHT
IRWR ENABLE
IPWR IN
147P1
W557-856-20RED
W557-857-20BLU
W557-863-20
W557-864-20RED
W557-865-20BLU
W557-866-20
W557-867-20
W557-868-20
W557-870-20
W557-862-20
232XK3
232XK2
DIM RELAY
W557-854-20
W557-946-22
W557-GD040A20N
W557-947-22
TB7
147R1
TB6
W557-873-20RED
W557-874-20BLU
W557-875-20RED
W557-876-20BLU
W557-871-20RED
W557-872-20BLU
SGAA
SGAE
SGAC
300P64
300J64
SGAB
SGY
300J68
300P68
W639-326-22
W639-387-22BLU
W639-386-22RED
SGR
SGD
SGP
SGB
STA 105
147A8
RIGHT
147J8
W673-166-22BLU
W673-165-22RED
SGT
STA 200
LEFT
147J6
W697-155-22BLU
W697-154-22RED
300P15
300J15
SGAF
SGQ
W645-368-22RED
W645-369-22BLU
W645-370-22RED
W645-372-22
W645-373-22RED
W645-374-22BLU
W645-375-22
W645-376-22
W645-377-22
W645-379-22
W645-311-20
STA 98
300J50
300P50
SGX
SGK
W697-140-22RED
W697-141-22BLU
W697-142-22RED
W697-143-22BLU
W697-144-22
W697-145-22RED
W697-146-22BLU
W697-147-22
W697-148-22
W697-149-22
W697-151-22
SGU
SGC
SGL
SGM
SGS
SGQ
SGA
TB401
STA 220
W673-181-22
W673-180-22
W673-164-22BLU
W673-163-22RED
W697-153-22BLU
W697-152-22RED
SGN
SGJ
SGF
300P54
300J54
W673-GD308A20N
SGR
GD308
W673-GD309A20N
147P2
PWR GND
GND
28V DC INPUT SIG
ARMED 28V PWR
OUTPUT
ELECTRONIC MODULE 147A3
W673-156-22
147J7
147A7
RIGHT
147J5
147A5
LEFT
W668-GD289A22N
W668-163-22RED
W668-164-22BLU
W668-165-22RED
W668-166-22BLU
W668-167-22
W668-168-22RED
W668-169-22BLU
W668-173-22
W668-170-22
W668-171-22
W668-172-22
W668-174-22
GD311
SGG
DISPENSER ASSEMBLY 147A4
300P53
STA 460
300J53
W666-156-22
W668-175-22
147J3
W666-GD123C22N
148XK2
148K2
RIGHT LDG GEAR 147P4
REMOTE BYPASS SW PANEL
W668-176-22
READY TO FIRE
STATUS
NORM
BYPASS
BYPASS
STA534
CONSOLE
CHAFF
28V NOI DC BUS
W550-249-20
147CB1
300P4
300J4
W645-313-20
NOI PDP
147 100E, 110E, 120E
300 J48
300 P48
STA 98
W697-139-22
W697-156-22
W697-158-22
W697-159-22
W697-157-20
W697-161-20
W697-160-20
LEFT ELECTRICAL COMPARTMENT
147K1
300P52
300J52
STA 460
W668-177-22
W668-178-22
W668-180-22
W668-179-22
W666-154-22
W668-GD323A22N
W668-GD289B22N
NOTE:
INDICATES EQUIPMENT MARKING
1 WITH
2 WITHOUT

16-2.2 FLARE DISPENSER SYSTEM VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

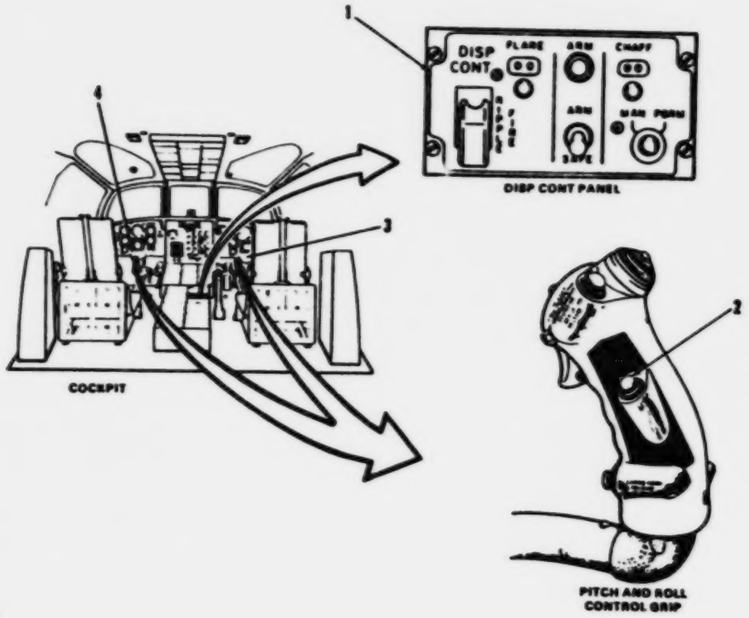
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

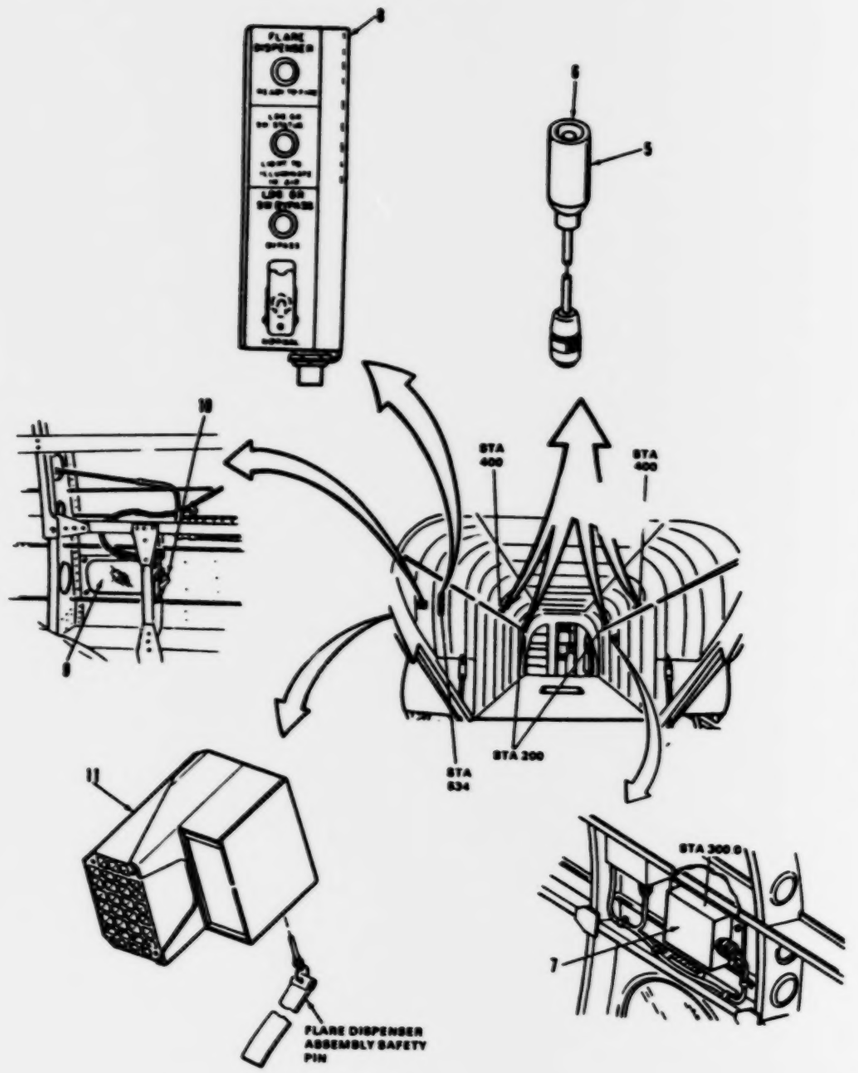
Materials:
Cloth (E120)

Personnel Required:
68F10 Aircraft Electrician

References:
TM 55-1520-240-10
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-10:
Flare Dispenser Assembly Safety Pin Installed
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off





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16-2.2 FLARE DISPENSER SYSTEM VISUAL CHECK (Continued)

TASK	RESULT
1. **Check DISP CONT panel (1).**	If any switch, counter, or light on panel (1) is damaged, replace panel.
2. **Check flare DISP switch (2)** on pilot's and copilot's pitch and roll control grips (3 and 4).	If either switch (2) is damaged, replace grip (3 or 4).
3. **Check four cable assemblies (5).**	If any cable assembly (5) is damaged, repair or replace it as required. If any switch (6) in cable assembly (5) is damaged replace cable assembly.
4. **Check timer (7).**	If timer (7) is loose or damaged tighten or replace it as required. If connector to timer is loose or damaged, tighten or replace it as required. If wiring to connector is damaged, repair or replace it as required.
5. **Check dispenser status panel (8).**	If any light or switch on panel (8) is damaged, replace it. If connector to panel is loose or damaged, tighten or replace it as required. If wiring to connector is damaged repair or replace it as required.
6. **Check flare dispenser viewing window (9).**	If window (9) is clouded or broken, clean or replace it as required.
7. Check flare dispenser wiring and electrical plug and receptacle (10).	If plug or receptacle (10) is loose or damaged, tighten or replace it as required. If wiring to plug or receptacle is damaged, repair or replace it as required.
8. **Check flare dispenser assembly (11).**	If dispenser is loose or damaged, tighten or replace it as required.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-2.3 FLARE DISPENSER SYSTEM OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Flare Dispenser Assembly Removed
Battery Connected
Electrical Power On
Hydraulic Power Off
Visual Check of Flare Dispenser System Performed (Task 16-2.2)

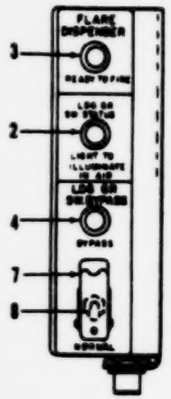
General Safety Instructions:

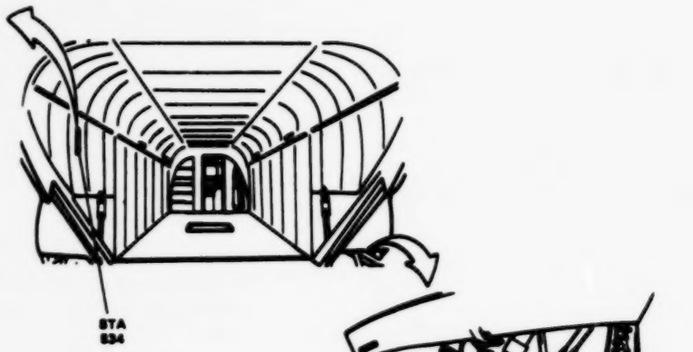
WARNING

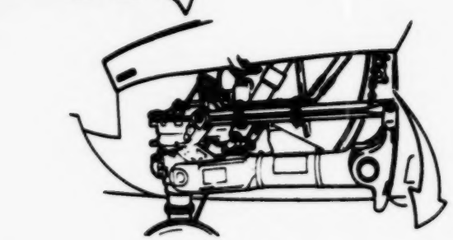
Do not perform test with flare dispenser assembly installed. System could fire resulting in damage injury or death.

WARNING

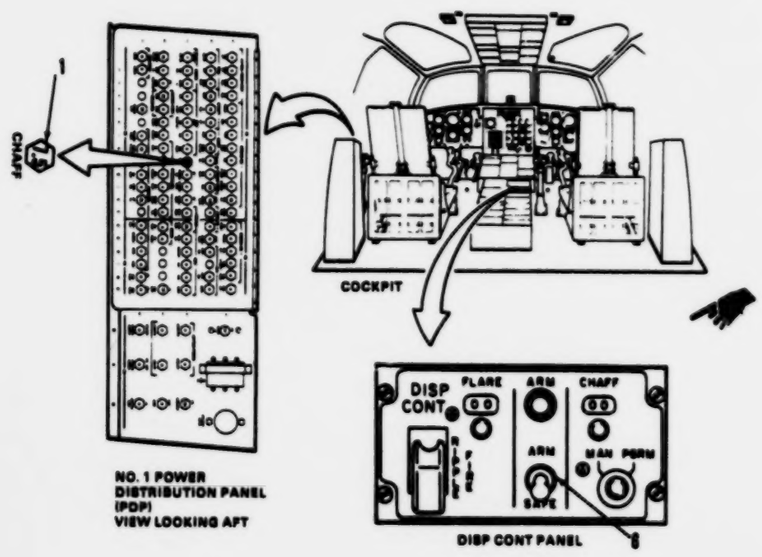
Keep personnel clear of flight controls.







D140-11441-5PA



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16-2.3 FLARE DISPENSER SYSTEM OPERATIONAL CHECK (Continued)

TASK	RESULT
1. **Check** that **CHAFF circuit breaker (1)** is closed.	If circuit breaker (1) is open, close it. If it opens again, go to task 16-2.4.
2. **Check** that **LDG GR SW STATUS light (2)** is out.	If light (2) is on, go to task 16-2.5.
3. **Press and release LDG GR SW STATUS, READY TO FIRE and LDG GR SW BYPASS lights (2, 3, and 4).**	Each light (2, 3, and 4) shall momentarily come on. If any light does not come on, go to task 16-2.6.
4. **Disconnect right landing gear proximity switch plug (5).**	LDG GR SW STATUS light (2) shall come on. If it does not come on, go to task 16-2.7.
5. **Set DISP CONT panel ARM SAFE switch (6) to ARM.**	READY TO FIRE light (3) shall come on. If light does not come on, go to task 16-2.8
6. **Connect right landing gear proximity switch plug (5).**	LDG GR SW STATUS and READY TO FIRE light (2 and 3) shall go out.
7. **Lift switchguard (7) and set LDG GR SW BYPASS switch (8) to BYPASS.**	LDG GR SW STATUS, READY TO FIRE, and LDG GR SW BYPASS LIGHTS (2, 3 and 4) shall come on. If they do not, go to task 16-2.10.
8. **Set DISP CONT panel ARM SAFE switch (6) to SAFE.**	READY TO FIRE light (3) shall go out.
9. **Set LDG GR SW BYPASS switch (8) to NORMAL and close switchguard (7).**	LDG GR SW STATUS light (2) and LDG GR SW BYPASS light (4) shall go out.
10. Perform functional test of flare dispenser system. Refer to TM 55-1520-240-23.	

NOTE

If a problem occurs during functional test of flare dispenser system, refer to table 16-2.1 to locate trouble symptom task number.

TABLE 16-2.1

TROUBLE SYMPTOM	TASK NUMBER
FLARE COUNTER SEQUENCES FROM **30** TO **00** WHEN **DISP CONT** PANEL **ARM SAFE** SWITCH SET TO **ARM.**	16-2.11
ARM LIGHT DOES NOT COME ON WHEN **ARM SAFE** SWITCH SET TO **ARM.**	16-2.12
FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN PILOT OR COPILOT **FLARE DISP** SWITCH PRESSED AND RELEASED.	16-2.13
FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN A CABIN FIRING SWITCH PRESSED AND RELEASED.	16-2.14
FLARE COUNTER DOES NOT INDICATE **00** WHEN **RIPPLE FIRE** SWITCH IS HELD UP.	16-2.15

FOLLOW-ON MAINTENANCE:

TM 55-1520-240-23:
Remove Electrical Power
Disconnect Battery
Install Flare Dispenser Assembly

END OF TASK

16-2.4 CHAFF CIRCUIT BREAKER WILL NOT STAY CLOSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

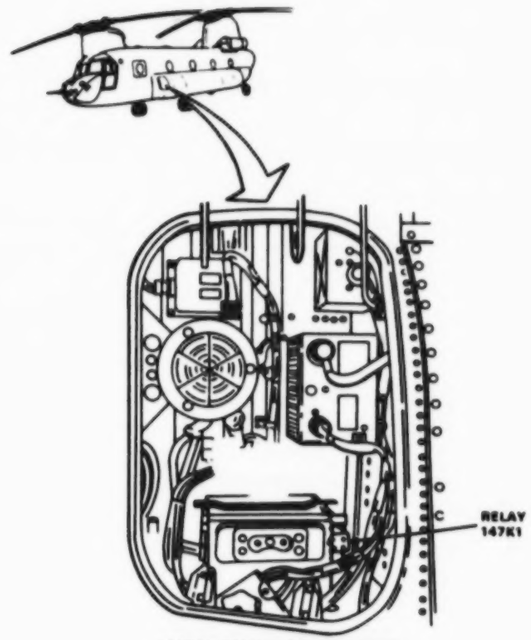
Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

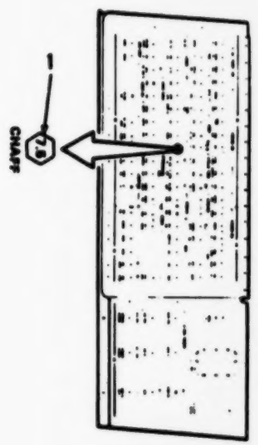
Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

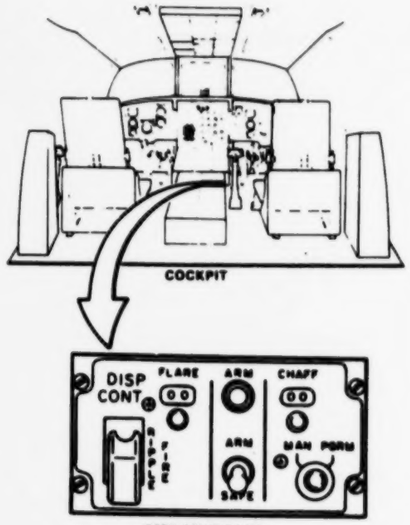
Equipment Condition:
TM 55-1520-240-23
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



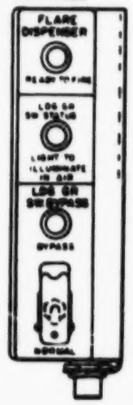
LEFT ELECTRICAL COMPARTMENT
SHOWN WITH DOOR OFF FOR CLARITY

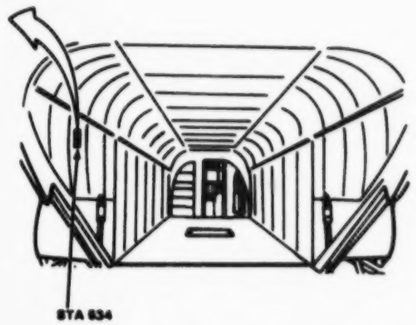


NO. 1 POWER
DISTRIBUTION PANEL
(PDP)
VIEW LOOKING AFT



DISP CONT PANEL





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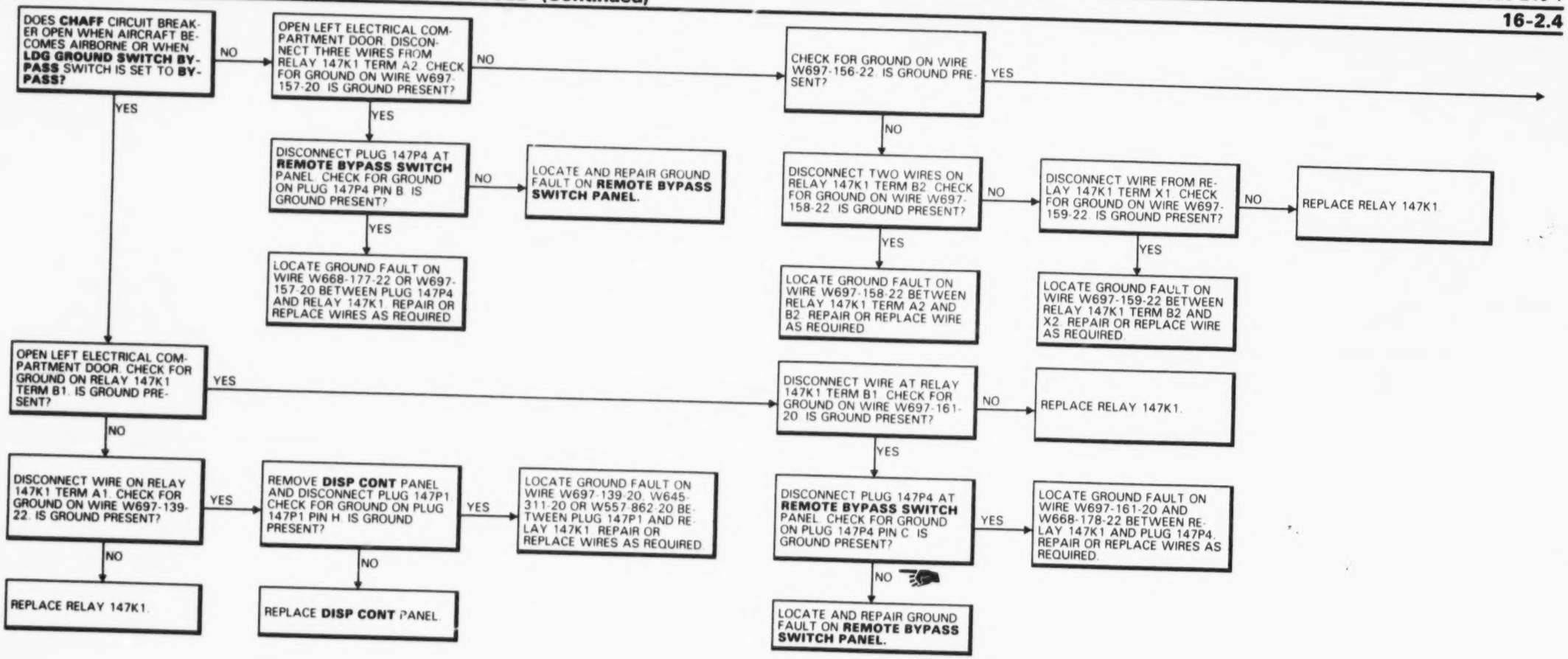
16-2.4 CHAFF CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


DOES **CHAFF** CIRCUIT BREAKER OPEN WHEN AIRCRAFT BECOMES AIRBORNE OR WHEN **LDG GROUND SWITCH BYPASS** SWITCH IS SET TO **BYPASS**?
NO
YES
OPEN LEFT ELECTRICAL COMPARTMENT DOOR. DISCONNECT THREE WIRES FROM RELAY 147K1 TERM A2. CHECK FOR GROUND ON WIRE W697-157-20. IS GROUND PRESENT?
NO
YES
DISCONNECT PLUG 147P4 AT **REMOTE BYPASS SWITCH** PANEL. CHECK FOR GROUND ON PLUG 147P4 PIN B. IS GROUND PRESENT?
NO
YES
LOCATE AND REPAIR GROUND FAULT ON **REMOTE BYPASS SWITCH PANEL**.
LOCATE GROUND FAULT ON WIRE W668-177-22 OR W697-157-20 BETWEEN PLUG 147P4 AND RELAY 147K1. REPAIR OR REPLACE WIRES AS REQUIRED
CHECK FOR GROUND ON WIRE W697-156-22. IS GROUND PRESENT?
YES
NO
DISCONNECT TWO WIRES ON RELAY 147K1 TERM B2. CHECK FOR GROUND ON WIRE W697-158-22. IS GROUND PRESENT?
NO
YES
DISCONNECT WIRE FROM RELAY 147K1 TERM X1. CHECK FOR GROUND ON WIRE W697-159-22. IS GROUND PRESENT?
NO
YES
REPLACE RELAY 147K1.
LOCATE GROUND FAULT ON WIRE W697-158-22 BETWEEN RELAY 147K1 TERM A2 AND B2. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE GROUND FAULT ON WIRE W697-159-22 BETWEEN RELAY 147K1 TERM B2 AND X2. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN LEFT ELECTRICAL COMPARTMENT DOOR. CHECK FOR GROUND ON RELAY 147K1 TERM B1. IS GROUND PRESENT?
YES
NO
DISCONNECT WIRE AT RELAY 147K1 TERM B1. CHECK FOR GROUND ON WIRE W697-161-20. IS GROUND PRESENT?
NO
YES
REPLACE RELAY 147K1.
DISCONNECT WIRE ON RELAY 147K1 TERM A1. CHECK FOR GROUND ON WIRE W697-139-22. IS GROUND PRESENT?
YES
NO
REMOVE **DISP CONT** PANEL AND DISCONNECT PLUG 147P1. CHECK FOR GROUND ON PLUG 147P1 PIN H. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W697-139-20, W645-311-20 OR W557-862-20 BETWEEN PLUG 147P1 AND RELAY 147K1. REPAIR OR REPLACE WIRES AS REQUIRED.
REPLACE RELAY 147K1.
REPLACE **DISP CONT** PANEL.
DISCONNECT PLUG 147P4 AT **REMOTE BYPASS SWITCH** PANEL. CHECK FOR GROUND ON PLUG 147P4 PIN C. IS GROUND PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W697-161-20 AND W668-178-22 BETWEEN RELAY 147K1 AND PLUG 147P4. REPAIR OR REPLACE WIRES AS REQUIRED.
LOCATE AND REPAIR GROUND FAULT ON **REMOTE BYPASS SWITCH PANEL**.

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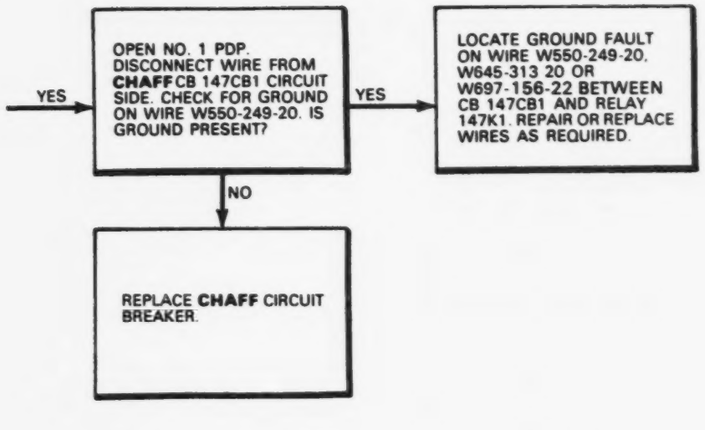
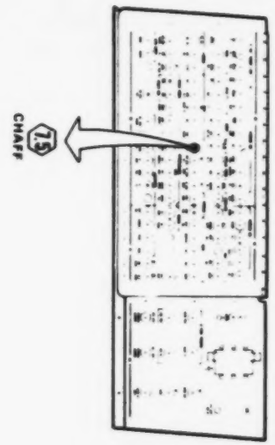
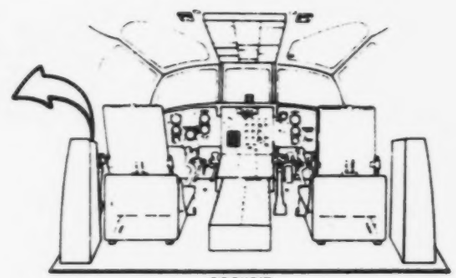
16-2.4 CHAFF CIRCUIT BREAKER WILL NOT STAY CLOSED (Continued)


YES
OPEN NO. 1 PDP. DISCONNECT WIRE FROM CHAFF CB 147CB1 CIRCUIT SIDE. CHECK FOR GROUND ON WIRE W550-249-20. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W550-249-20, W645-313 20 OR W697-156-22 BETWEEN CB 147CB1 AND RELAY 147K1. REPAIR OR REPLACE WIRES AS REQUIRED.
NO
REPLACE CHAFF CIRCUIT BREAKER.



NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT



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END OF TASK

16-2.5 LANDING GEAR SWITCH STATUS LIGHT IS ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

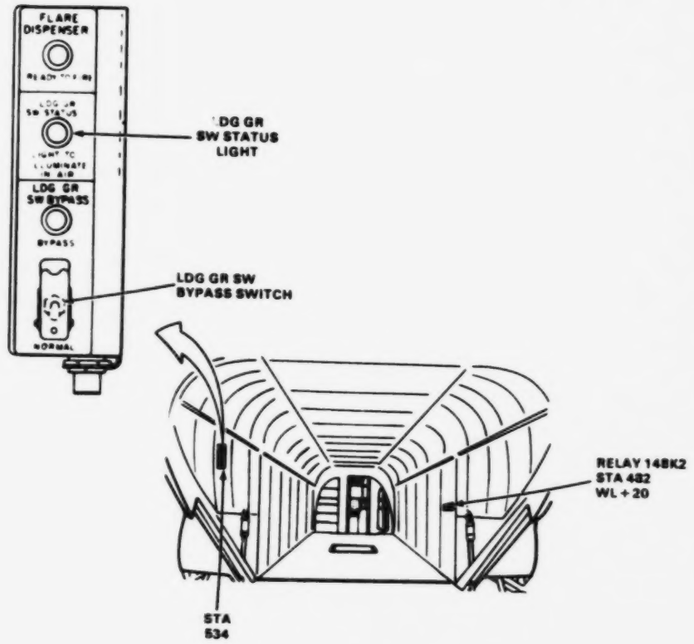
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

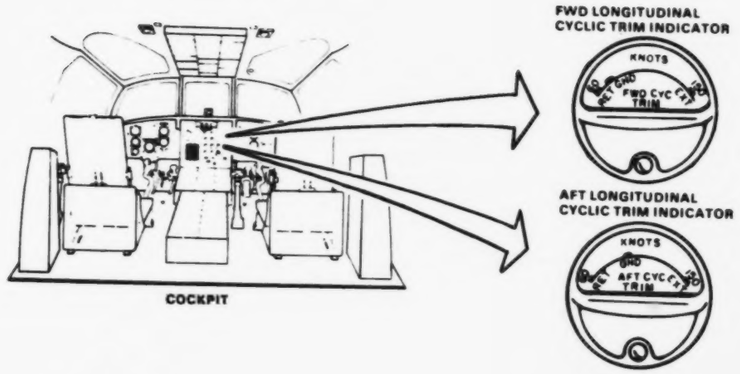
Personnel Required:
Aircraft Electrician (2)

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



D145-12055-SPA



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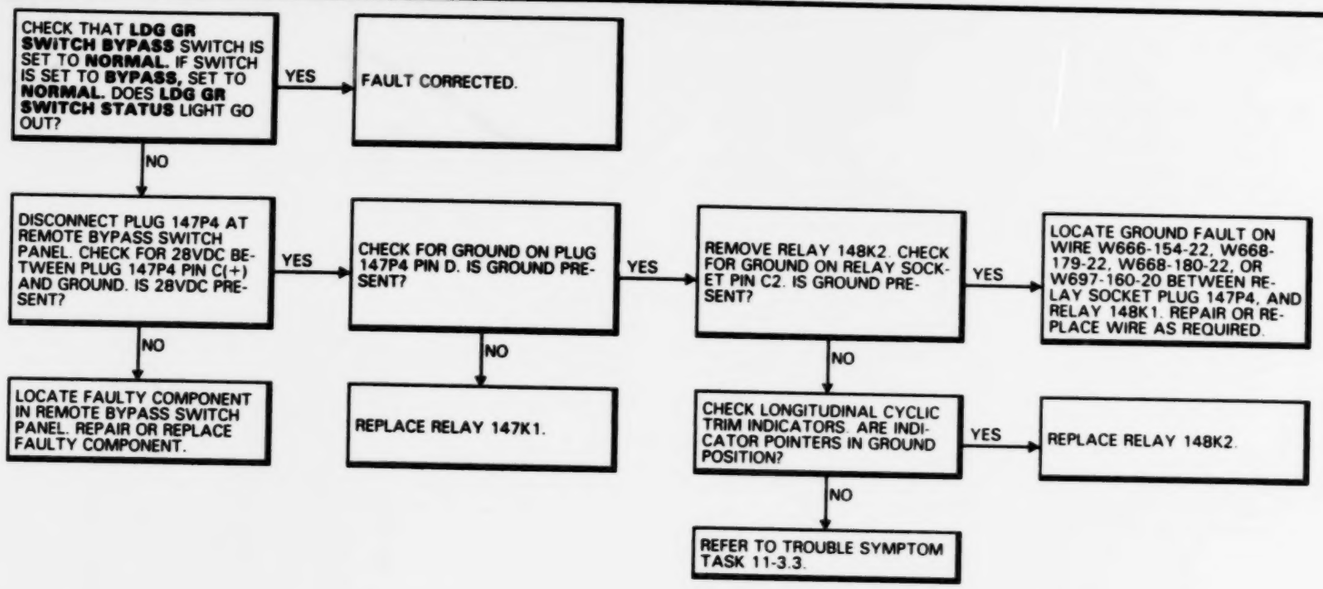

CHECK THAT LDG GR SWITCH BYPASS SWITCH IS SET TO NORMAL. IF SWITCH IS SET TO BYPASS, SET TO NORMAL. DOES LDG GR SWITCH STATUS LIGHT GO OUT?
YES
FAULT CORRECTED.
NO
DISCONNECT PLUG 147P4 AT REMOTE BYPASS SWITCH PANEL. CHECK FOR 28VDC BETWEEN PLUG 147P4 PIN C(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR GROUND ON PLUG 147P4 PIN D. IS GROUND PRESENT?
YES
REMOVE RELAY 148K2. CHECK FOR GROUND ON RELAY SOCKET PIN C2. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-154-22, W668-179-22, W668-180-22, OR W697-160-20 BETWEEN RELAY SOCKET PLUG 147P4, AND RELAY 148K1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE FAULTY COMPONENT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE FAULTY COMPONENT.
NO
REPLACE RELAY 147K1.
NO
CHECK LONGITUDINAL CYCLIC TRIM INDICATORS. ARE INDICATOR POINTERS IN GROUND POSITION?
YES
REPLACE RELAY 148K2.
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.3.

END OF TASK

16-2.6 LDG GR SW STATUS, READY TO FIRE, OR LDG GR SW BYPASS LIGHTS DO NOT COME ON WHEN PRESSED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

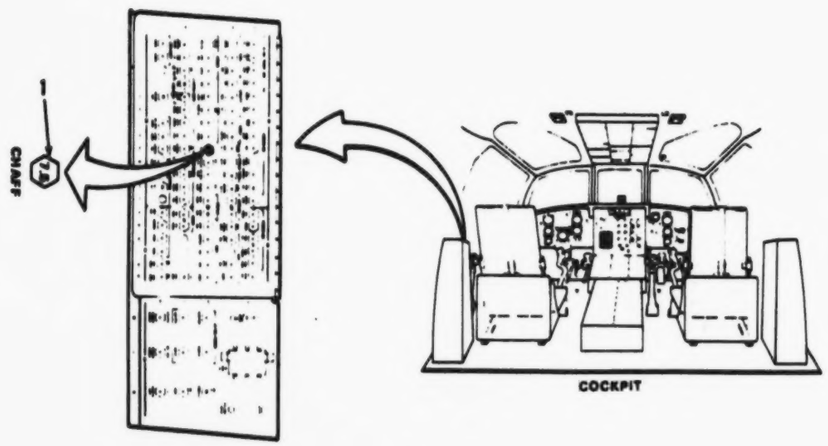
Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

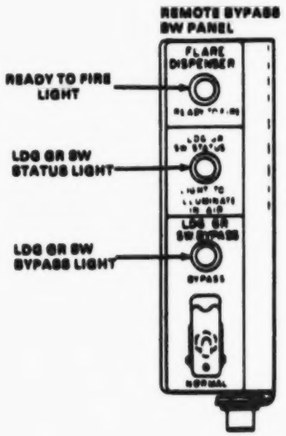
References:
TM 55-1520-240-23

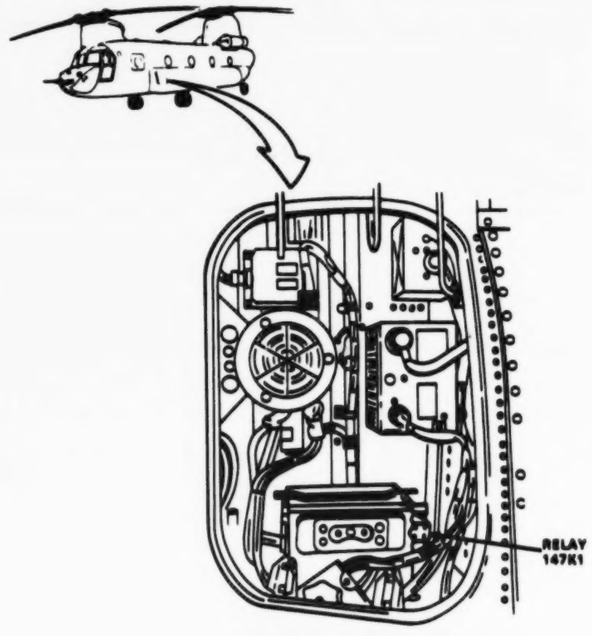
Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off



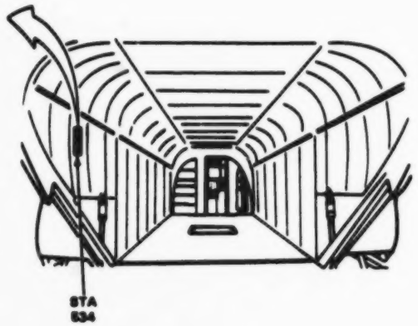
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

90X84





LEFT ELECTRICAL COMPARTMENT SHOWN WITH DOOR OFF FOR CLARITY



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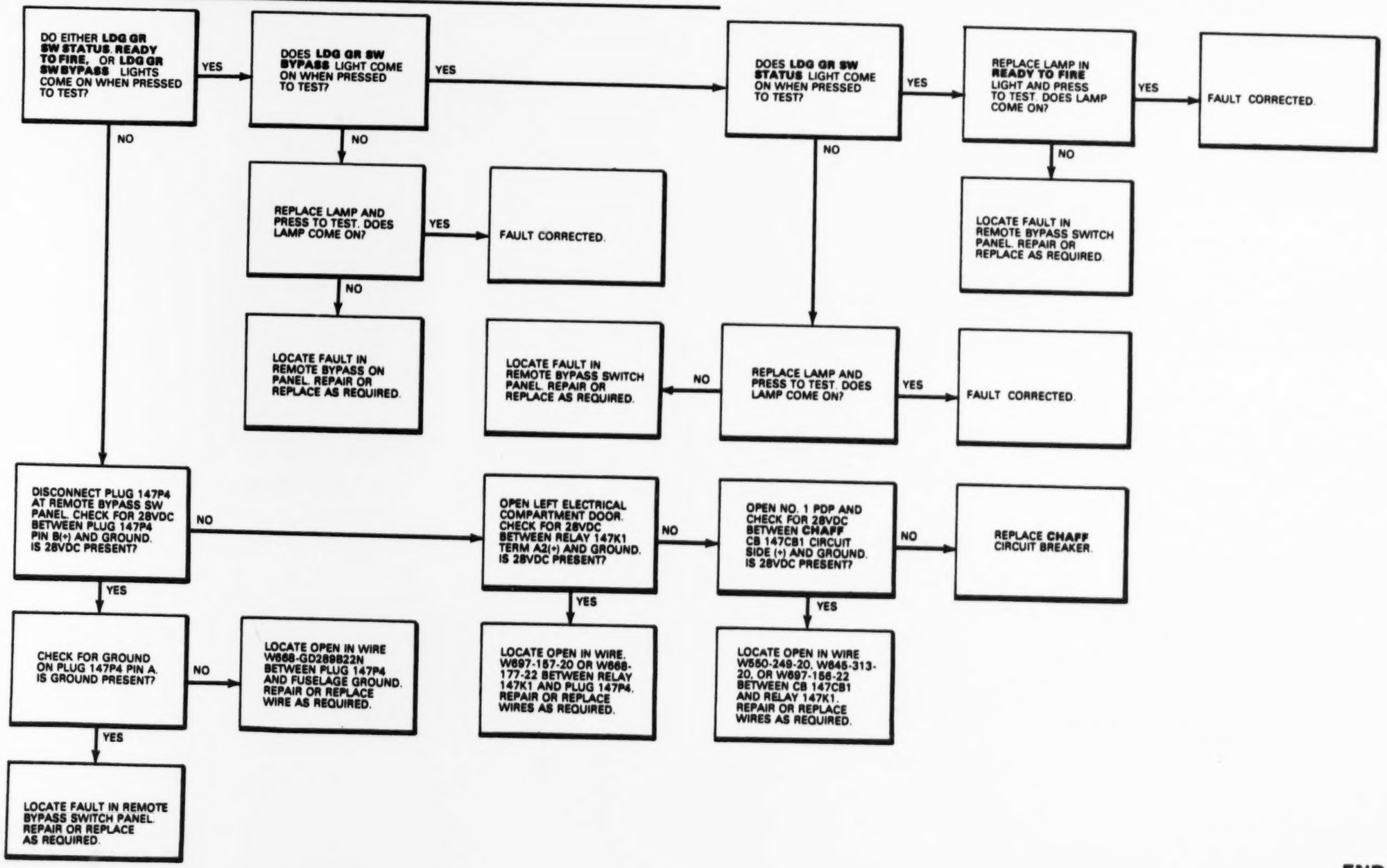
16-2.6 LDG GR SW STATUS, READY TO FIRE, OR LDG GR SW BYPASS LIGHTS DO NOT COME ON WHEN PRESSED (Continued)


DO EITHER LDG GR SW STATUS READY TO FIRE, OR LDG GR SW BYPASS LIGHTS COME ON WHEN PRESSED TO TEST?
YES
NO
DOES LDG GR SW BYPASS LIGHT COME ON WHEN PRESSED TO TEST?
YES
NO
REPLACE LAMP AND PRESS TO TEST. DOES LAMP COME ON?
YES
FAULT CORRECTED.
NO
LOCATE FAULT IN REMOTE BYPASS ON PANEL. REPAIR OR REPLACE AS REQUIRED.
DOES LDG GR SW STATUS LIGHT COME ON WHEN PRESSED TO TEST?
YES
REPLACE LAMP IN READY TO FIRE LIGHT AND PRESS TO TEST. DOES LAMP COME ON?
YES
FAULT CORRECTED.
NO
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
NO
REPLACE LAMP AND PRESS TO TEST. DOES LAMP COME ON?
YES
FAULT CORRECTED.
NO
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
DISCONNECT PLUG 147P4 AT REMOTE BYPASS SW PANEL. CHECK FOR 28VDC BETWEEN PLUG 147P4 PIN B(+) AND GROUND. IS 28VDC PRESENT?
NO
OPEN LEFT ELECTRICAL COMPARTMENT DOOR. CHECK FOR 28VDC BETWEEN RELAY 147K1 TERM A2(+) AND GROUND. IS 28VDC PRESENT?
NO
OPEN NO. 1 PDP AND CHECK FOR 28VDC BETWEEN CHAFF CB 147CB1 CIRCUIT SIDE (+) AND GROUND. IS 28VDC PRESENT?
NO
REPLACE CHAFF CIRCUIT BREAKER.
YES
CHECK FOR GROUND ON PLUG 147P4 PIN A. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W668-GD289B22N BETWEEN PLUG 147P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
YES
LOCATE OPEN IN WIRE. W697-157-20 OR W668-177-22 BETWEEN RELAY 147K1 AND PLUG 147P4. REPAIR OR REPLACE WIRES AS REQUIRED.
YES
LOCATE OPEN IN WIRE W550-249-20, W645-313-20, OR W697-156-22 BETWEEN CB 147CB1 AND RELAY 147K1. REPAIR OR REPLACE WIRES AS REQUIRED.

END OF TASK

16-2.7 LDG GR SW STATUS LIGHT DOES NOT COME ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

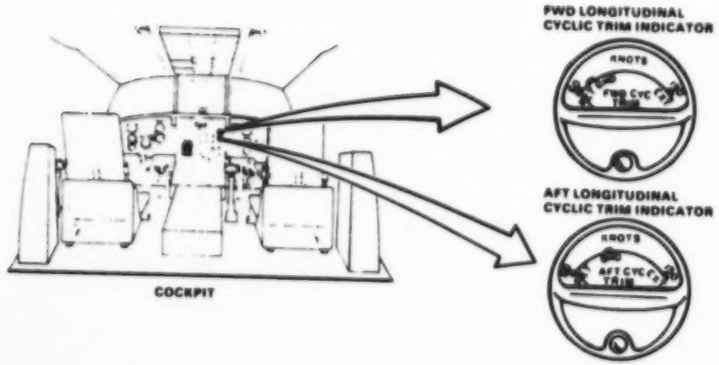
Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off
Right Landing Gear Proximity Switch Plug Disconnected



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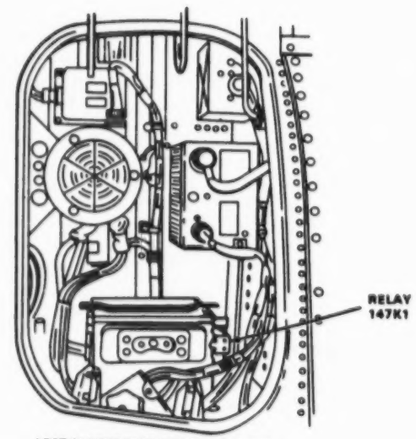

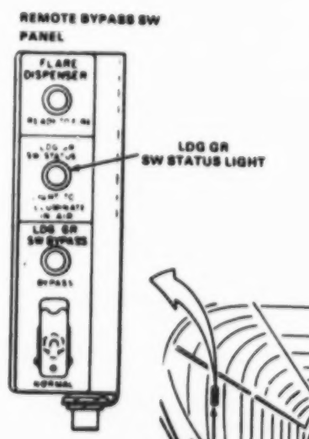

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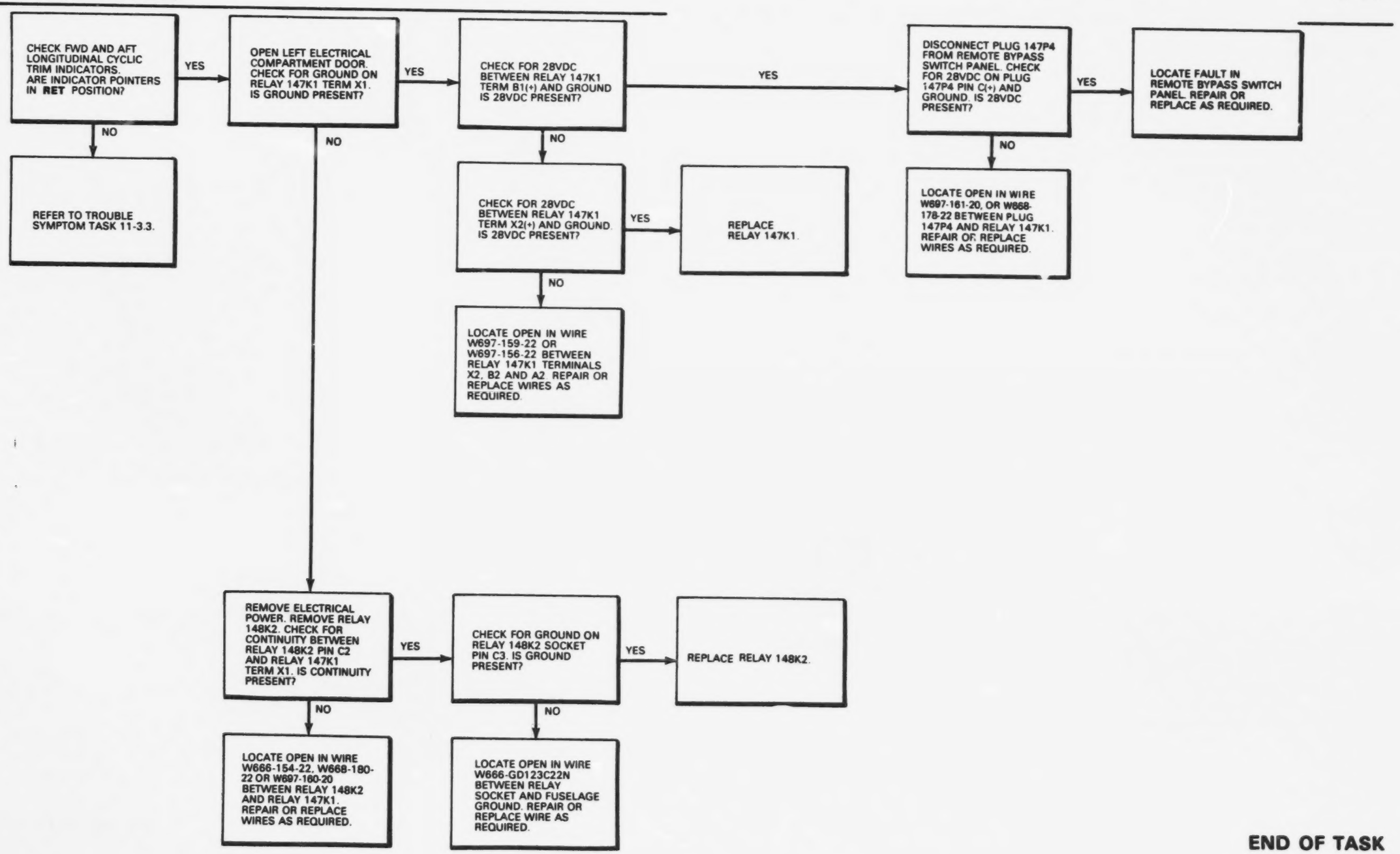
16-2.7 LDG GR SW STATUS LIGHT DOES NOT COME ON (Continued)


CHECK FWD AND AFT LONGITUDINAL CYCLIC TRIM INDICATORS. ARE INDICATOR POINTERS IN RET POSITION?
YES
NO
REFER TO TROUBLE SYMPTOM TASK 11-3.3.
OPEN LEFT ELECTRICAL COMPARTMENT DOOR. CHECK FOR GROUND ON RELAY 147K1 TERM X1. IS GROUND PRESENT?
YES
NO
CHECK FOR 28VDC BETWEEN RELAY 147K1 TERM B1(+) AND GROUND IS 28VDC PRESENT?
YES
NO
CHECK FOR 28VDC BETWEEN RELAY 147K1 TERM X2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE RELAY 147K1.
NO
LOCATE OPEN IN WIRE W697-159-22 OR W697-156-22 BETWEEN RELAY 147K1 TERMINALS X2, B2 AND A2. REPAIR OR REPLACE WIRES AS REQUIRED.
DISCONNECT PLUG 147P4 FROM REMOTE BYPASS SWITCH PANEL. CHECK FOR 28VDC ON PLUG 147P4 PIN C(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W697-161-20, OR W668-178-22 BETWEEN PLUG 147P4 AND RELAY 147K1. REPAIR OR REPLACE WIRES AS REQUIRED.
REMOVE ELECTRICAL POWER. REMOVE RELAY 148K2. CHECK FOR CONTINUITY BETWEEN RELAY 148K2 PIN C2 AND RELAY 147K1 TERM X1. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W666-154-22, W668-180-22 OR W697-160-20 BETWEEN RELAY 148K2 AND RELAY 147K1. REPAIR OR REPLACE WIRES AS REQUIRED.
CHECK FOR GROUND ON RELAY 148K2 SOCKET PIN C3. IS GROUND PRESENT?
YES
REPLACE RELAY 148K2.
NO
LOCATE OPEN IN WIRE W666-GD123C22N BETWEEN RELAY SOCKET AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-2.8 READY TO FIRE LIGHT DOES NOT COME ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

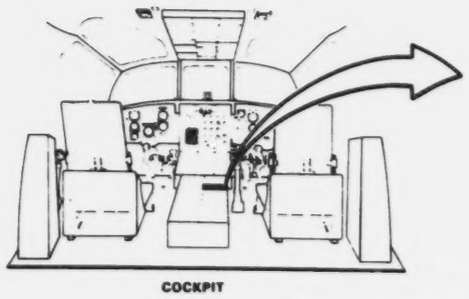
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

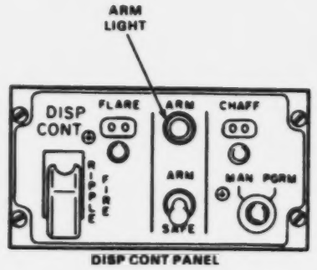
Materials:
None

Personnel Required:
Aircraft Electrician (2)

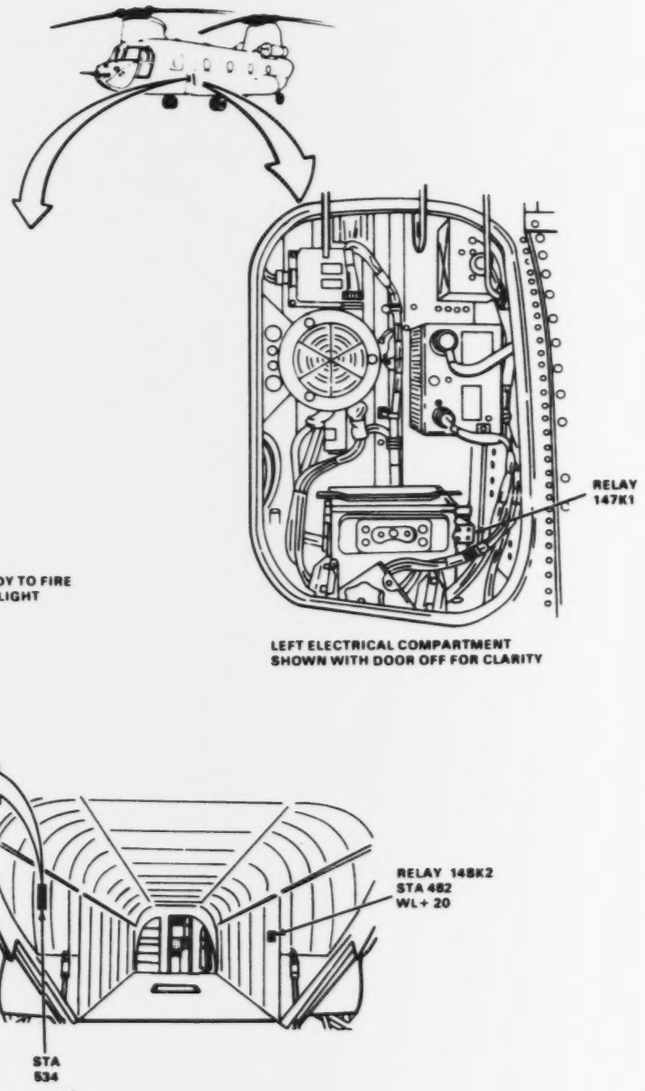
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





DISP CONT PANEL



LEFT ELECTRICAL COMPARTMENT
SHOWN WITH DOOR OFF FOR CLARITY

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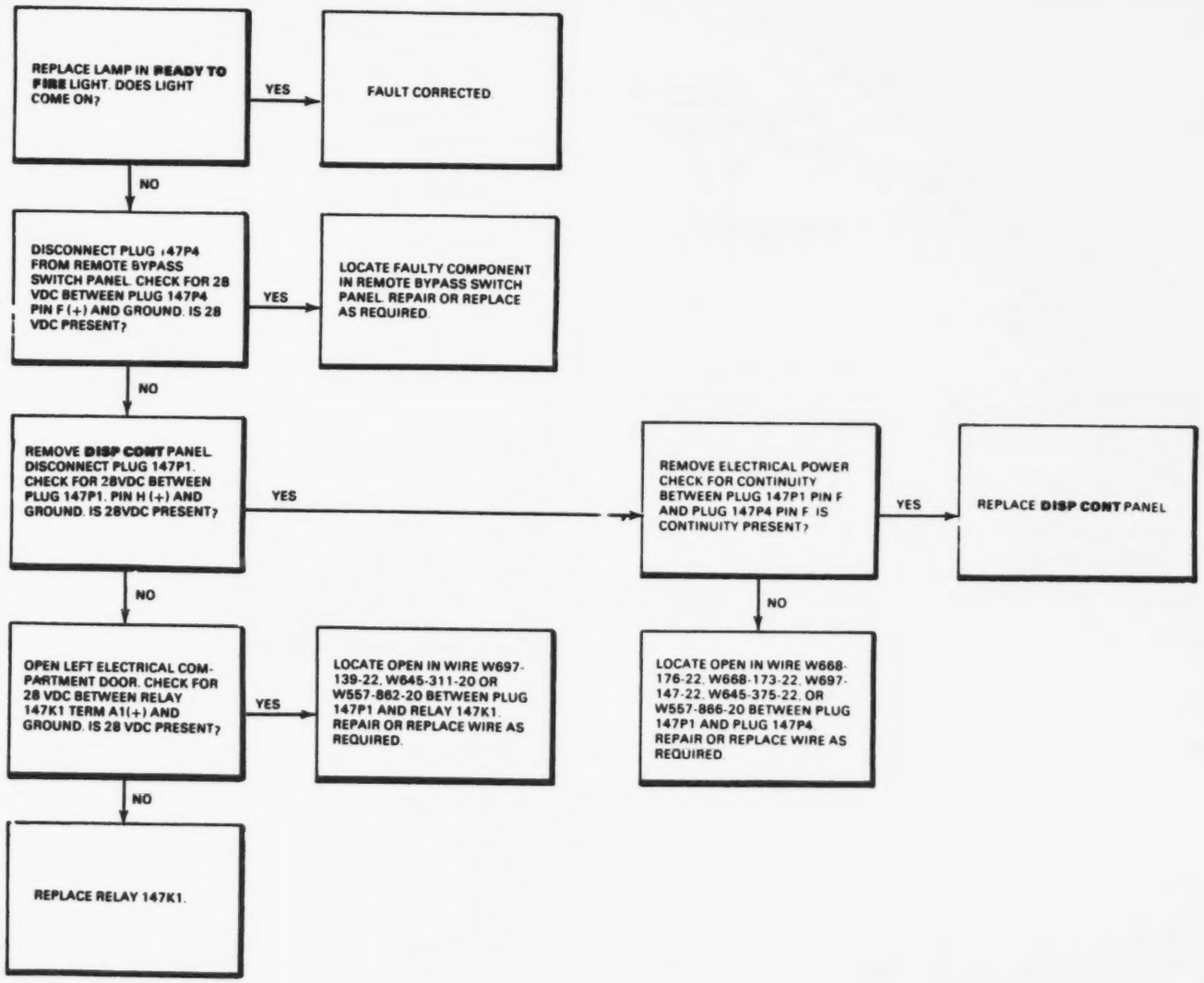
16-2.8 READY TO FIRE LIGHT DOES NOT COME ON (Continued)


REPLACE LAMP IN READY TO FIRE LIGHT. DOES LIGHT COME ON?
YES
FAULT CORRECTED.
NO
DISCONNECT PLUG 147P4 FROM REMOTE BYPASS SWITCH PANEL. CHECK FOR 28 VDC BETWEEN PLUG 147P4 PIN F (+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE FAULTY COMPONENT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
NO
REMOVE DISP CONT PANEL. DISCONNECT PLUG 147P1. CHECK FOR 28VDC BETWEEN PLUG 147P1. PIN H (+) AND GROUND. IS 28VDC PRESENT?
YES
REMOVE ELECTRICAL POWER CHECK FOR CONTINUITY BETWEEN PLUG 147P1 PIN F AND PLUG 147P4 PIN F. IS CONTINUITY PRESENT?
YES
REPLACE DISP CONT PANEL
NO
LOCATE OPEN IN WIRE W668-176-22, W668-173-22, W697-147-22, W645-375-22, OR W557-866-20 BETWEEN PLUG 147P1 AND PLUG 147P4 REPAIR OR REPLACE WIRE AS REQUIRED.
NO
OPEN LEFT ELECTRICAL COMPARTMENT DOOR. CHECK FOR 28 VDC BETWEEN RELAY 147K1 TERM A1(+) AND GROUND. IS 28 VDC PRESENT?
YES
LOCATE OPEN IN WIRE W697-139-22, W645-311-20 OR W557-862-20 BETWEEN PLUG 147P1 AND RELAY 147K1. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE RELAY 147K1.

TASK 16-2.9 DELETED

END OF TASK

16-2.10 LDG GR SW STATUS AND READY TO FIRE LIGHTS DO NOT COME ON

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

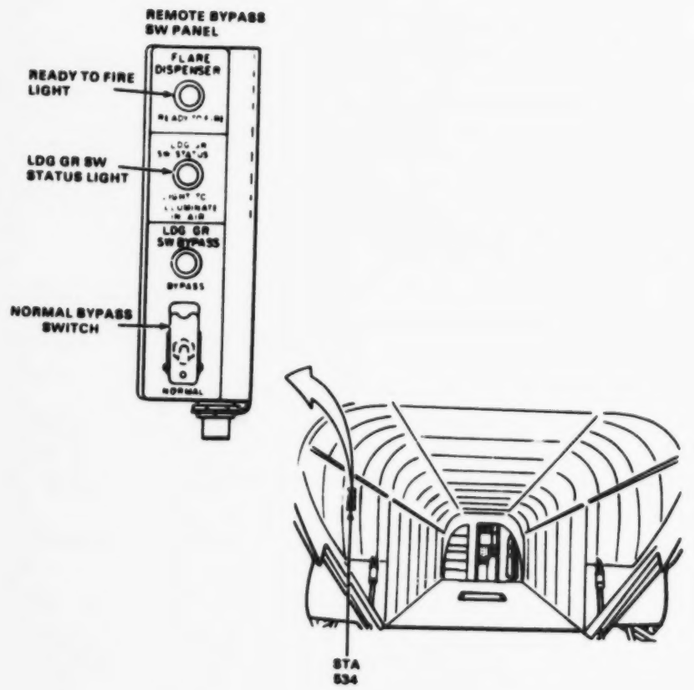
Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off



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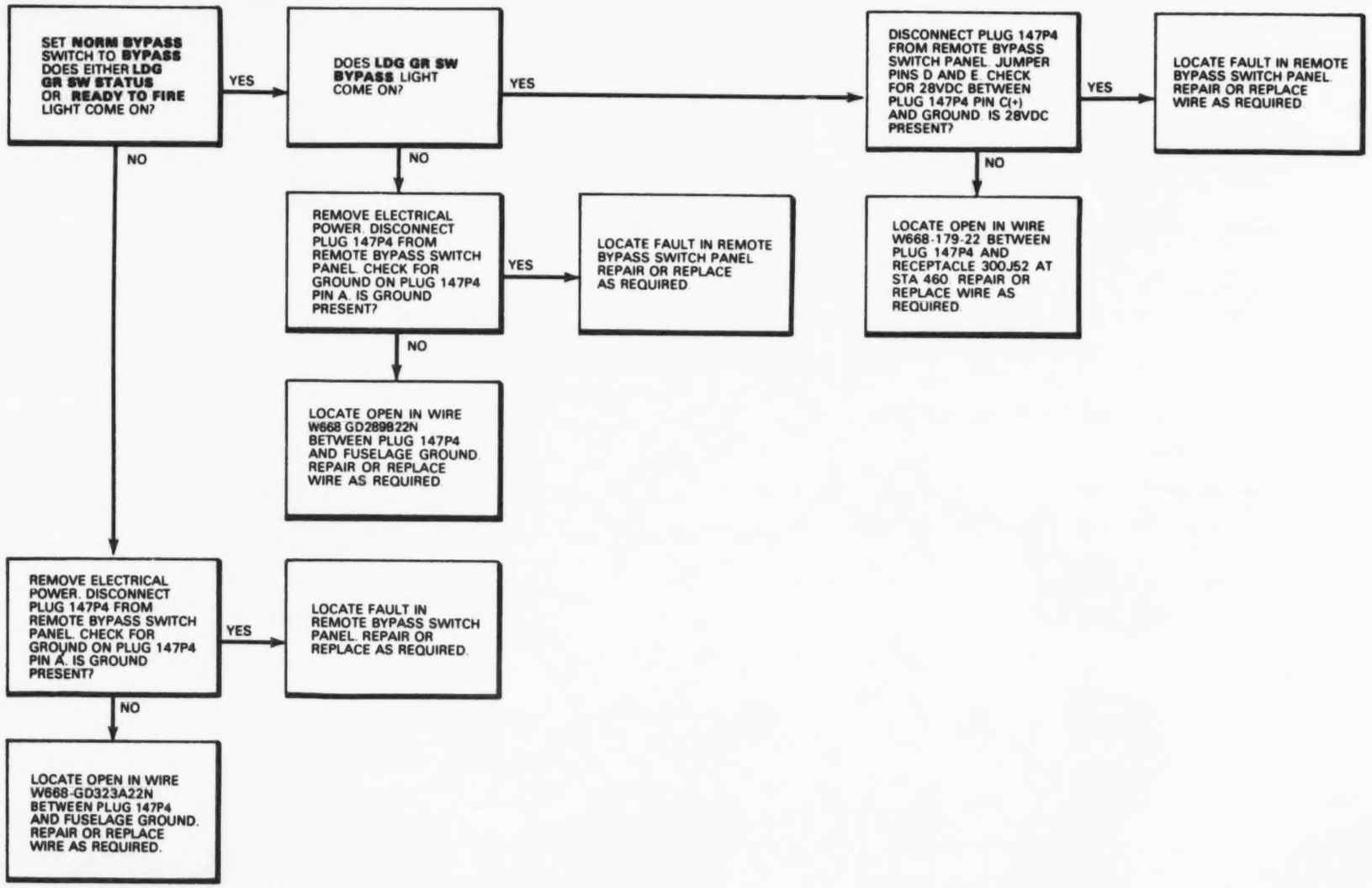
16-2.10 LDG GR SW STATUS READY TO FIRE AND LDG GR SW BYPASS LIGHTS DO NOT COME ON (Continued)


SET NORM BYPASS SWITCH TO BYPASS. DOES EITHER LDG GR SW STATUS OR READY TO FIRE LIGHT COME ON?
YES
NO
DOES LDG GR SW BYPASS LIGHT COME ON?
YES
NO
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 147P4 FROM REMOTE BYPASS SWITCH PANEL. CHECK FOR GROUND ON PLUG 147P4 PIN A. IS GROUND PRESENT?
YES
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W668 GD289B22N BETWEEN PLUG 147P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLUG 147P4 FROM REMOTE BYPASS SWITCH PANEL. JUMPER PINS D AND E. CHECK FOR 28VDC BETWEEN PLUG 147P4 PIN C(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W668-179-22 BETWEEN PLUG 147P4 AND RECEPTACLE 300J52 AT STA 460. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 147P4 FROM REMOTE BYPASS SWITCH PANEL. CHECK FOR GROUND ON PLUG 147P4 PIN A. IS GROUND PRESENT?
YES
LOCATE FAULT IN REMOTE BYPASS SWITCH PANEL. REPAIR OR REPLACE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W668-GD323A22N BETWEEN PLUG 147P4 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-2.11 FLARE COUNTER SEQUENCES FROM 30 TO 00 WHEN DISP CONT PANEL ARM SAFE SWITCH SET TO ARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

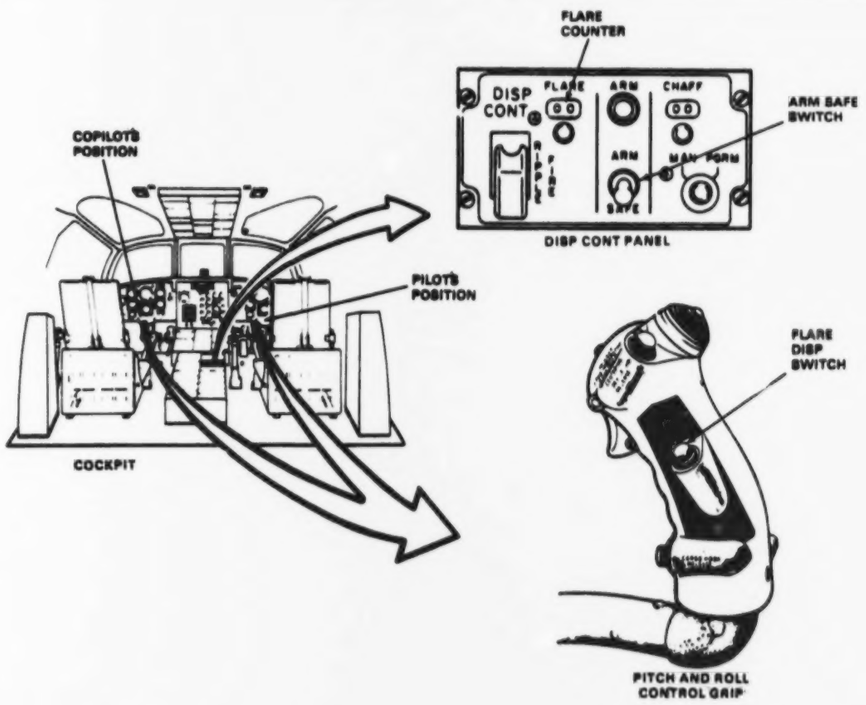
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

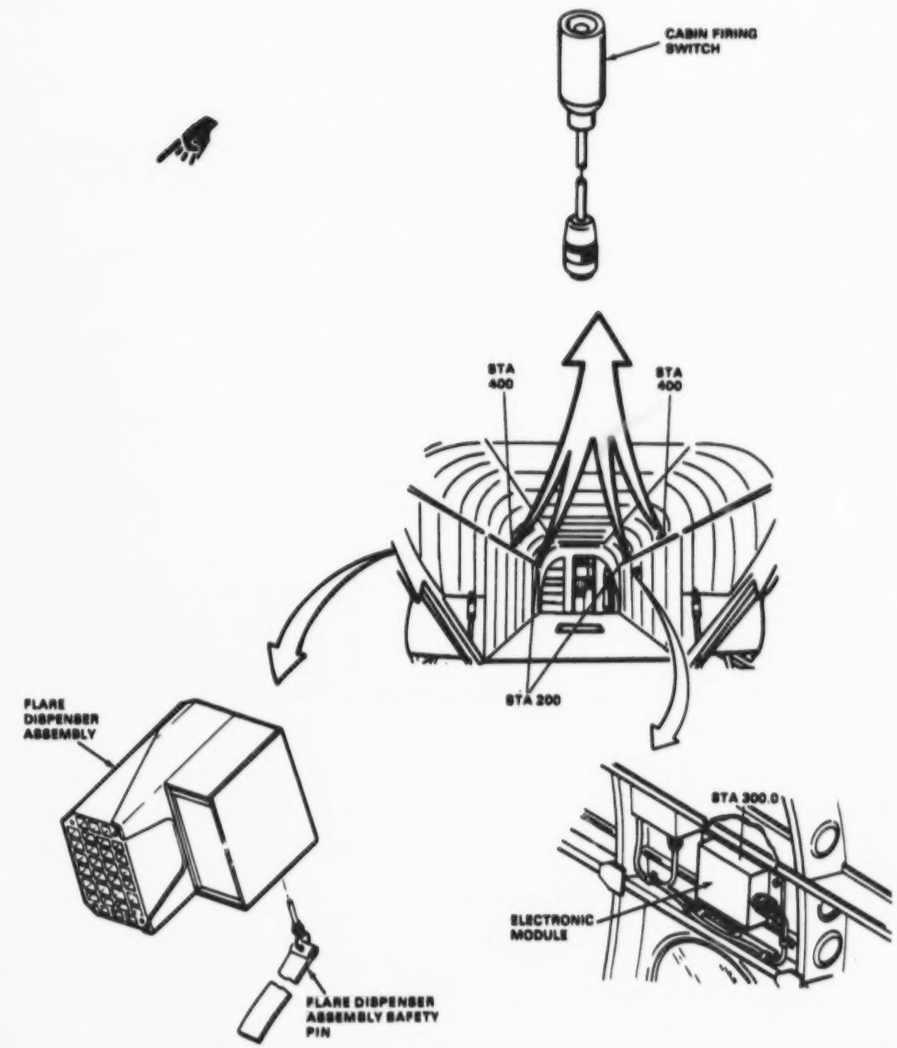
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 9-1095-206-13 & P
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





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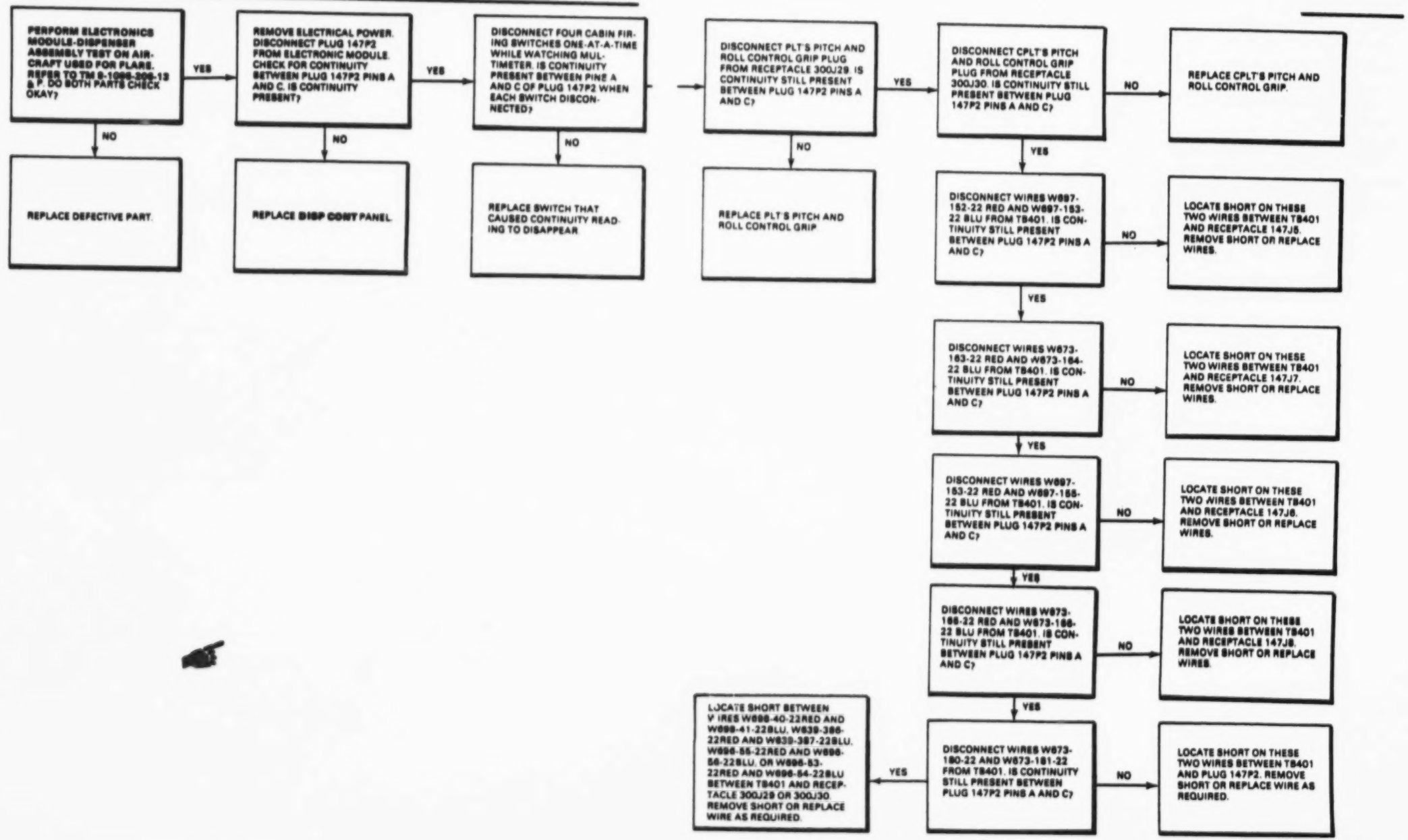
16-2.11 FLARE COUNTER SEQUENCES FROM 30 TO 00 WHEN DISP CONT PANEL ARM SAFE SWITCH SET TO ARM (Continued)


PERFORM ELECTRONICS MODULE-DISPENSER ASSEMBLY TEST ON AIRCRAFT USED FOR FLARE. REFER TO TM 9-1095-209-13 & P. DO BOTH PARTS CHECK OKAY?
YES
NO
REPLACE DEFECTIVE PART.
REMOVE ELECTRICAL POWER. DISCONNECT PLUG 147P2 FROM ELECTRONIC MODULE. CHECK FOR CONTINUITY BETWEEN PLUG 147P2 PINS A AND C. IS CONTINUITY PRESENT?
YES
NO
REPLACE DISP CONT PANEL.
DISCONNECT FOUR CABIN FIRING SWITCHES ONE-AT-A-TIME WHILE WATCHING MULTIMETER. IS CONTINUITY PRESENT BETWEEN PINE A AND C OF PLUG 147P2 WHEN EACH SWITCH DISCONNECTED?
YES
NO
REPLACE SWITCH THAT CAUSED CONTINUITY READING TO DISAPPEAR.
DISCONNECT PLT'S PITCH AND ROLL CONTROL GRIP PLUG FROM RECEPTACLE 300J29. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
YES
NO
REPLACE PLT'S PITCH AND ROLL CONTROL GRIP.
DISCONNECT CPLT'S PITCH AND ROLL CONTROL GRIP PLUG FROM RECEPTACLE 300J30. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
NO
REPLACE CPLT'S PITCH AND ROLL CONTROL GRIP.
YES
DISCONNECT WIRES W697-152-22 RED AND W697-153-22 BLU FROM TB401. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
NO
LOCATE SHORT ON THESE TWO WIRES BETWEEN TB401 AND RECEPTACLE 147J6. REMOVE SHORT OR REPLACE WIRES.
YES
DISCONNECT WIRES W673-163-22 RED AND W673-164-22 BLU FROM TB401. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
NO
LOCATE SHORT ON THESE TWO WIRES BETWEEN TB401 AND RECEPTACLE 147J7. REMOVE SHORT OR REPLACE WIRES.
YES
DISCONNECT WIRES W697-153-22 RED AND W697-155-22 BLU FROM TB401. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
NO
LOCATE SHORT ON THESE TWO WIRES BETWEEN TB401 AND RECEPTACLE 147J8. REMOVE SHORT OR REPLACE WIRES.
YES
DISCONNECT WIRES W673-166-22 RED AND W673-166-22 BLU FROM TB401. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
NO
LOCATE SHORT ON THESE TWO WIRES BETWEEN TB401 AND RECEPTACLE 147J8. REMOVE SHORT OR REPLACE WIRES.
YES
DISCONNECT WIRES W673-180-22 AND W673-181-22 FROM TB401. IS CONTINUITY STILL PRESENT BETWEEN PLUG 147P2 PINS A AND C?
NO
LOCATE SHORT ON THESE TWO WIRES BETWEEN TB401 AND PLUG 147P2. REMOVE SHORT OR REPLACE WIRE AS REQUIRED.
YES
LOCATE SHORT BETWEEN WIRES W696-40-22RED AND W696-41-22BLU, W639-386-22RED AND W639-387-22BLU, W696-55-22RED AND W696-56-22BLU, OR W696-53-22RED AND W696-54-22BLU BETWEEN TB401 AND RECEPTACLE 300J29 OR 300J30. REMOVE SHORT OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-2.12 ARM LIGHT DOES NOT COME ON WHEN ARM SAFE SWITCH SET TO ARM 16-2.12

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

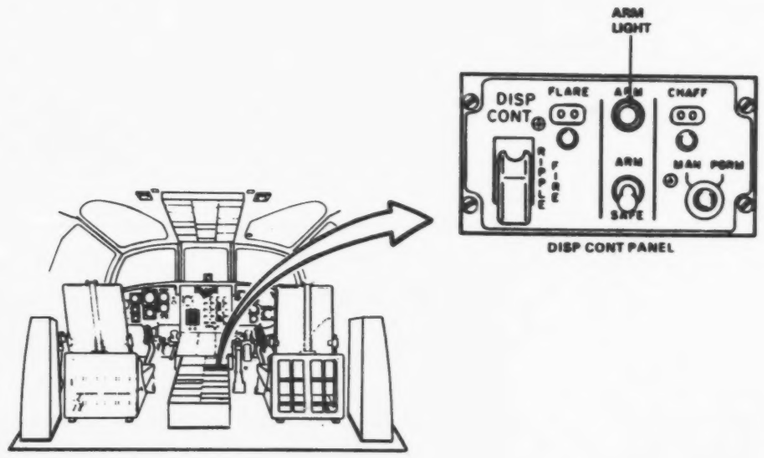
Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Multimeter

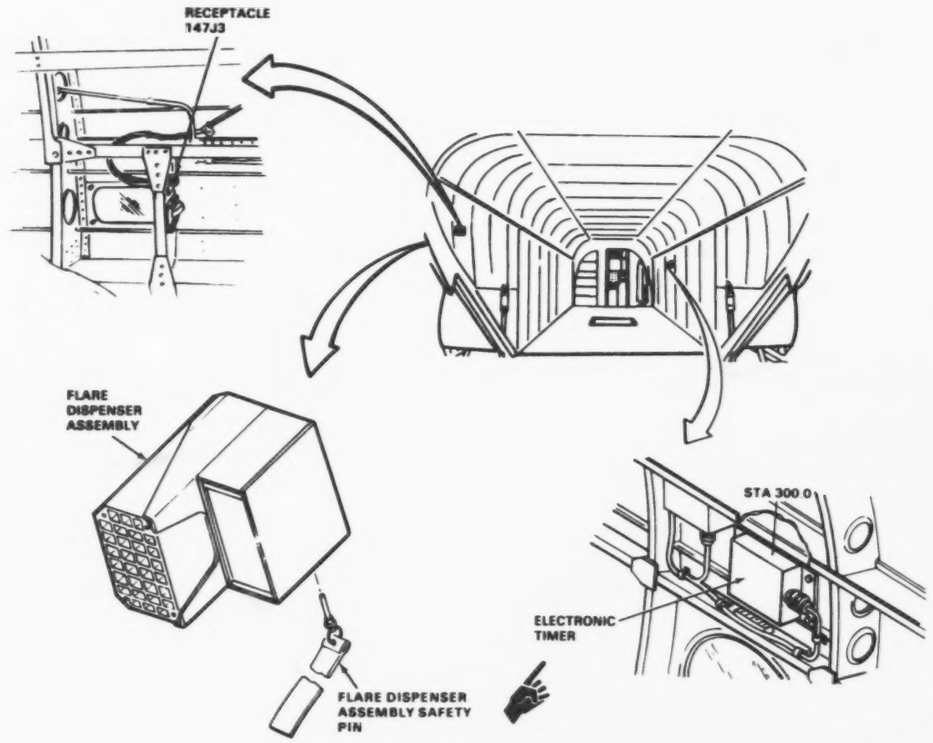
Materials:
None

Personnel Required:
Aircraft Electrician (2)

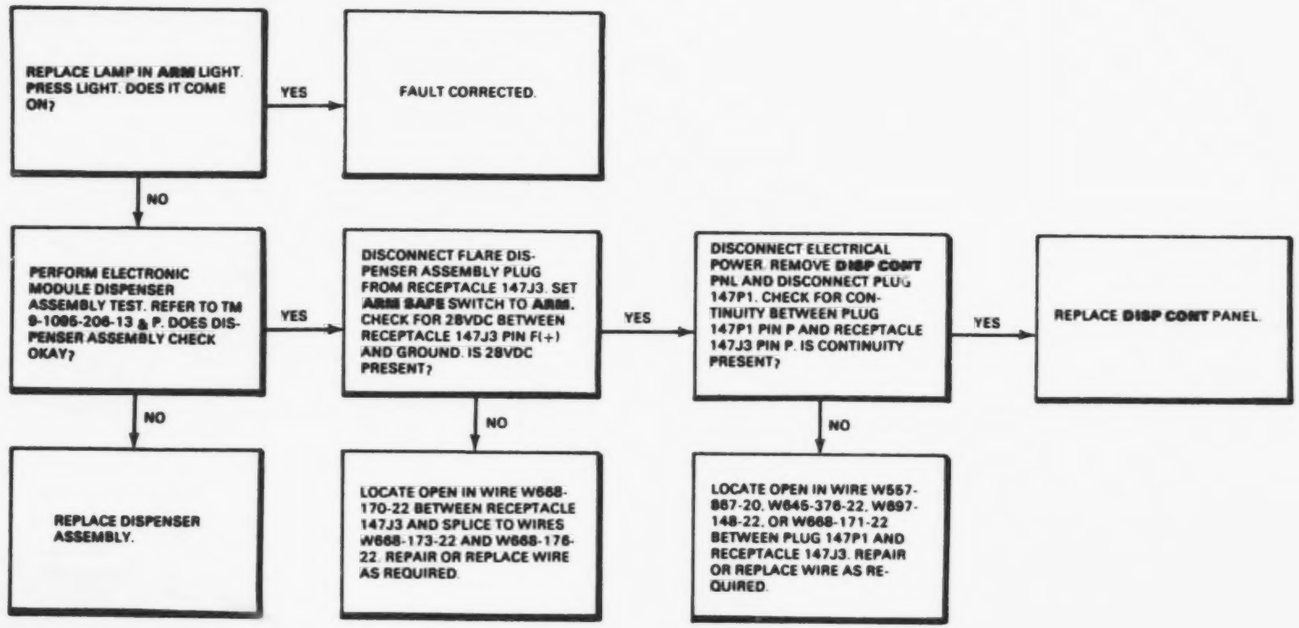
References:
TM 9-1095-206-13 & P
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23
Battery Connected
Electrical Power On
Hydraulic Power Off





16-2.12 ARM LIGHT DOES NOT COME ON WHEN ARM SAFE SWITCH SET TO ARM (Continued)


REPLACE LAMP IN ARM LIGHT. PRESS LIGHT. DOES IT COME ON?
YES
FAULT CORRECTED.
NO
PERFORM ELECTRONIC MODULE DISPENSER ASSEMBLY TEST. REFER TO TM 9-1095-206-13 & P. DOES DISPENSER ASSEMBLY CHECK OKAY?
YES
DISCONNECT FLARE DISPENSER ASSEMBLY PLUG FROM RECEPTACLE 147J3. SET ARM SAFE SWITCH TO ARM. CHECK FOR 28VDC BETWEEN RECEPTACLE 147J3 PIN F(+) AND GROUND. IS 28VDC PRESENT?
YES
DISCONNECT ELECTRICAL POWER. REMOVE DISP CONT PNL AND DISCONNECT PLUG 147P1. CHECK FOR CONTINUITY BETWEEN PLUG 147P1 PIN P AND RECEPTACLE 147J3 PIN P. IS CONTINUITY PRESENT?
YES
REPLACE DISP CONT PANEL.
NO
REPLACE DISPENSER ASSEMBLY.
NO
LOCATE OPEN IN WIRE W668-170-22 BETWEEN RECEPTACLE 147J3 AND SPLICE TO WIRES W668-173-22 AND W668-176-22. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W557-887-20, W645-376-22, W897-148-22, OR W668-171-22 BETWEEN PLUG 147P1 AND RECEPTACLE 147J3. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-2.13 FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN PILOT OR COPILOT FLARE DISP SWITCH PRESSED AND RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

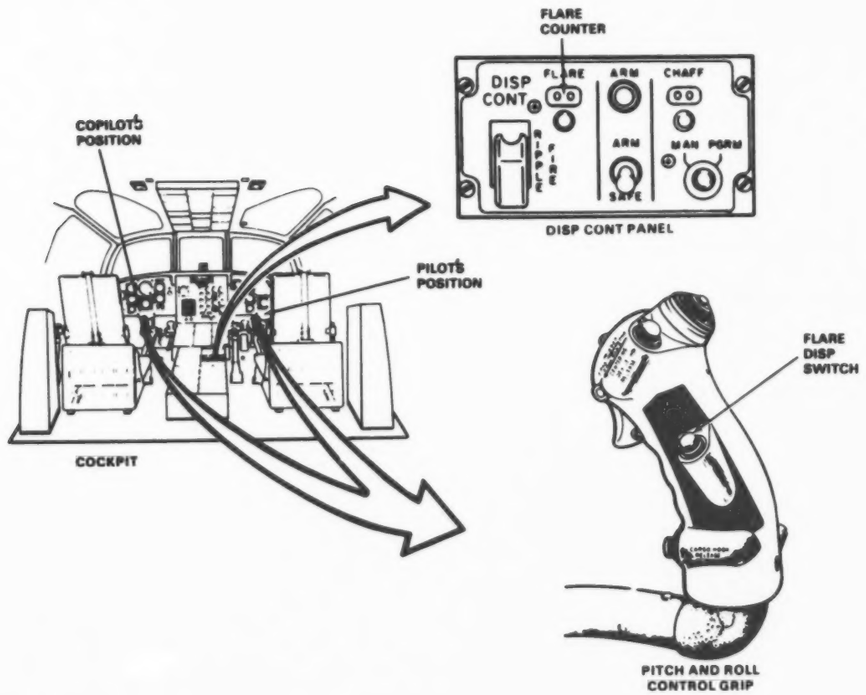
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

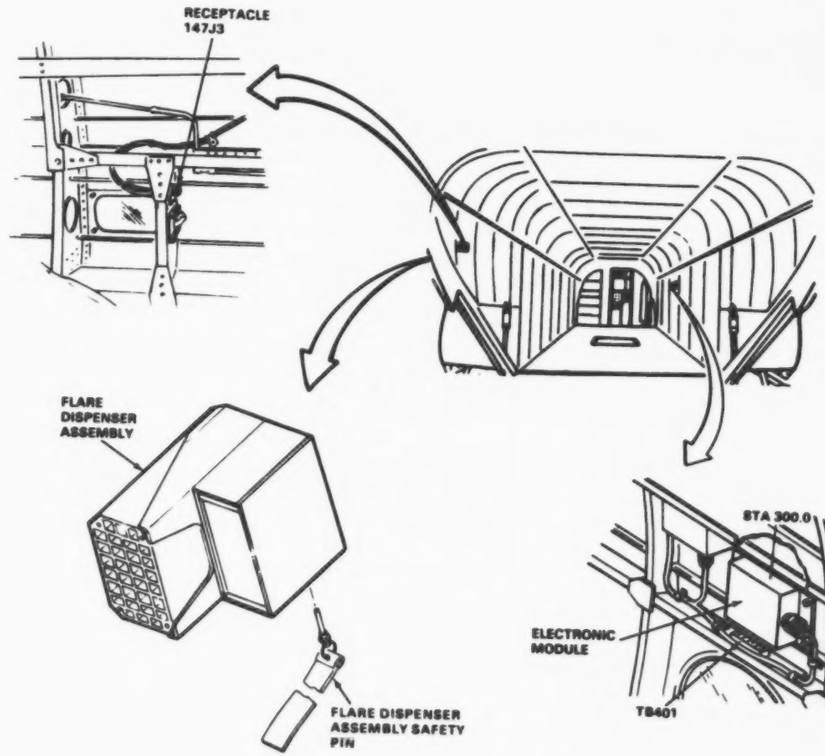
Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 9-1095-206-13&P
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off





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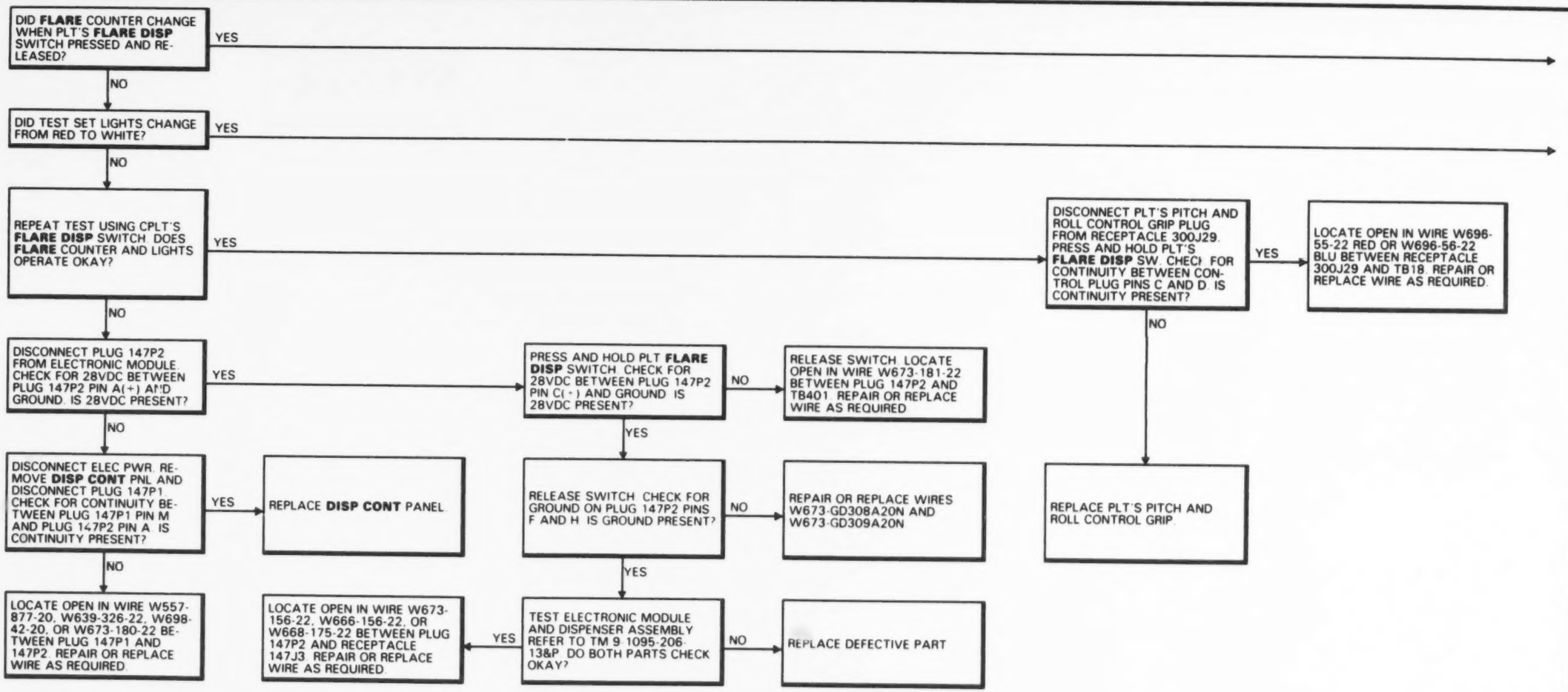
16-2.13 FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN PILOT OR COPILOT FLARE DISP SWITCH PRESSED AND RELEASED (Continued)


DID FLARE COUNTER CHANGE WHEN PLT'S FLARE DISP SWITCH PRESSED AND RELEASED?
YES
NO
DID TEST SET LIGHTS CHANGE FROM RED TO WHITE?
YES
NO
REPEAT TEST USING CPLT'S FLARE DISP SWITCH. DOES FLARE COUNTER AND LIGHTS OPERATE OKAY?
YES
NO
DISCONNECT PLUG 147P2 FROM ELECTRONIC MODULE. CHECK FOR 28VDC BETWEEN PLUG 147P2 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
NO
DISCONNECT ELEC PWR. REMOVE DISP CONT PNL AND DISCONNECT PLUG 147P1. CHECK FOR CONTINUITY BETWEEN PLUG 147P1 PIN M AND PLUG 147P2 PIN A. IS CONTINUITY PRESENT?
YES
REPLACE DISP CONT PANEL
NO
LOCATE OPEN IN WIRE W557-877-20, W639-326-22, W698-42-20, OR W673-180-22 BETWEEN PLUG 147P1 AND 147P2. REPAIR OR REPLACE WIRE AS REQUIRED
PRESS AND HOLD PLT FLARE DISP SWITCH. CHECK FOR 28VDC BETWEEN PLUG 147P2 PIN C(+) AND GROUND. IS 28VDC PRESENT?
NO
RELEASE SWITCH. LOCATE OPEN IN WIRE W673-181-22 BETWEEN PLUG 147P2 AND TB401. REPAIR OR REPLACE WIRE AS REQUIRED
YES
RELEASE SWITCH. CHECK FOR GROUND ON PLUG 147P2 PINS F AND H. IS GROUND PRESENT?
NO
REPAIR OR REPLACE WIRES W673-GD308A20N AND W673-GD309A20N
YES
TEST ELECTRONIC MODULE AND DISPENSER ASSEMBLY REFER TO TM 9-1095-206-13&P. DO BOTH PARTS CHECK OKAY?
NO
REPLACE DEFECTIVE PART
YES
LOCATE OPEN IN WIRE W673-156-22, W666-156-22, OR W668-175-22 BETWEEN PLUG 147P2 AND RECEPTACLE 147J3. REPAIR OR REPLACE WIRE AS REQUIRED.
DISCONNECT PLT'S PITCH AND ROLL CONTROL GRIP PLUG FROM RECEPTACLE 300J29. PRESS AND HOLD PLT'S FLARE DISP SW. CHECK FOR CONTINUITY BETWEEN CONTROL PLUG PINS C AND D. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W696-55-22 RED OR W696-56-22 BLU BETWEEN RECEPTACLE 300J29 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE PLT'S PITCH AND ROLL CONTROL GRIP

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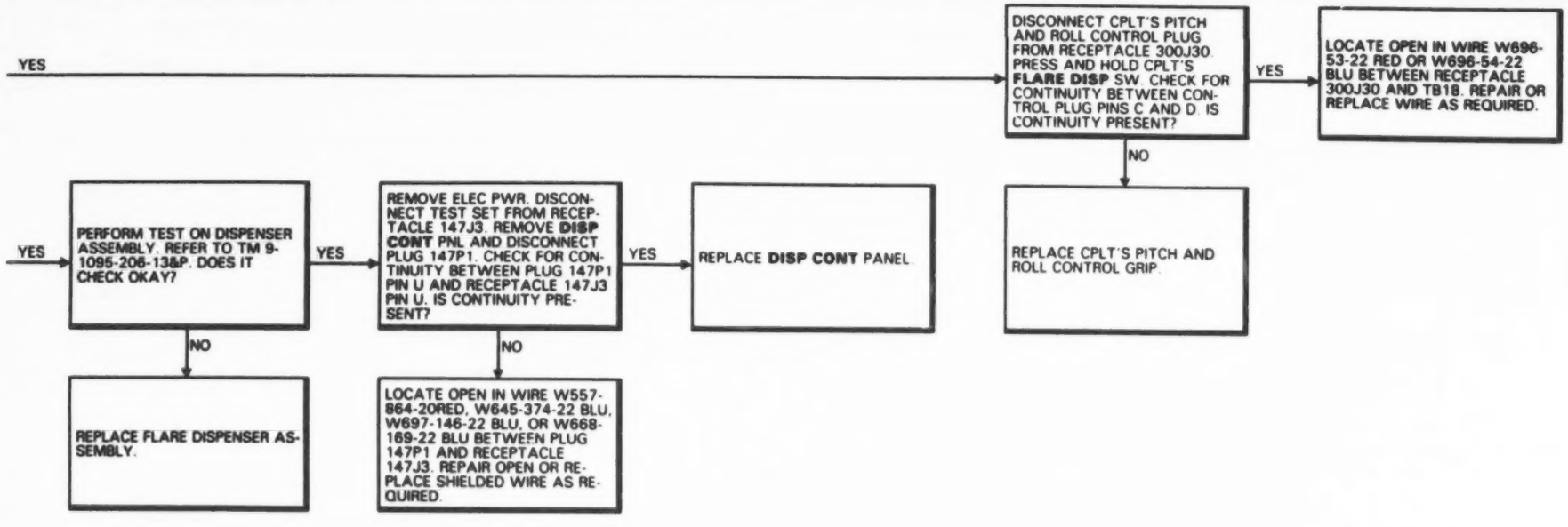
16-2.13 FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN PILOT OR COPILOT FLARE DISP SWITCH PRESSED AND RELEASED (Continued)


YES
DISCONNECT CPLT'S PITCH AND ROLL CONTROL PLUG FROM RECEPTACLE 300J30. PRESS AND HOLD CPLT'S **FLARE DISP** SW. CHECK FOR CONTINUITY BETWEEN CONTROL PLUG PINS C AND D. IS CONTINUITY PRESENT?
YES
LOCATE OPEN IN WIRE W696-53-22 RED OR W696-54-22 BLU BETWEEN RECEPTACLE 300J30 AND TB18. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CPLT'S PITCH AND ROLL CONTROL GRIP.
YES
PERFORM TEST ON DISPENSER ASSEMBLY. REFER TO TM 9-1095-206-13&P. DOES IT CHECK OKAY?
YES
REMOVE ELEC PWR. DISCONNECT TEST SET FROM RECEPTACLE 147J3. REMOVE **DISP CONT** PNL AND DISCONNECT PLUG 147P1. CHECK FOR CONTINUITY BETWEEN PLUG 147P1 PIN U AND RECEPTACLE 147J3 PIN U. IS CONTINUITY PRESENT?
YES
REPLACE **DISP CONT** PANEL.
NO
REPLACE FLARE DISPENSER ASSEMBLY.
NO
LOCATE OPEN IN WIRE W557-864-20RED, W645-374-22 BLU, W697-146-22 BLU, OR W668-169-22 BLU BETWEEN PLUG 147P1 AND RECEPTACLE 147J3. REPAIR OPEN OR REPLACE SHIELDED WIRE AS REQUIRED.

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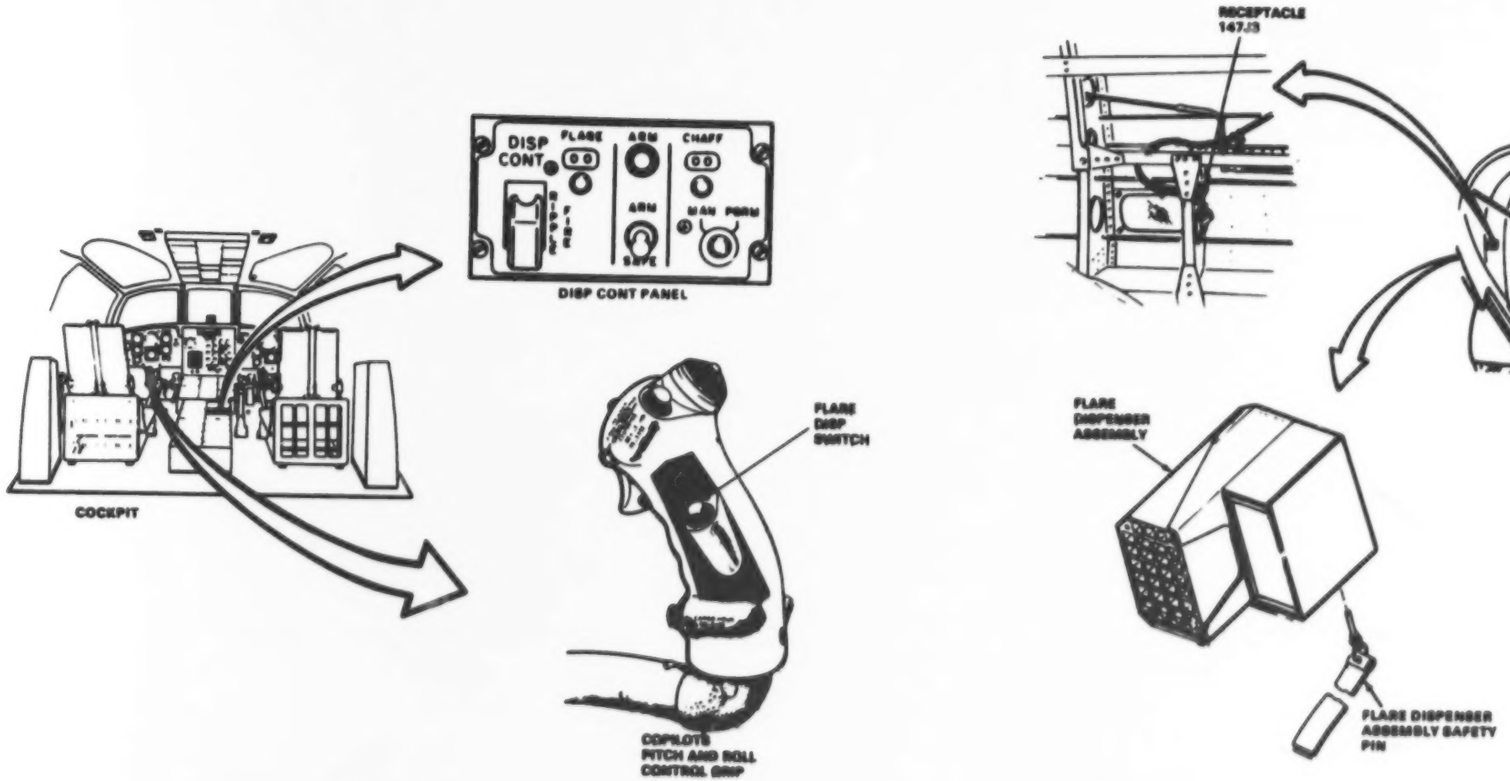

DISP CONT
FLARE
ARM
CHAFF
DISP CONT PANEL
COCKPIT
FLARE DISP SWITCH
COPILOTS PITCH AND ROLL CONTROL GRIP
RECEPTACLE 147J3
FLARE DISPENSER ASSEMBLY
FLARE DISPENSER ASSEMBLY SAFETY PIN

10289

16-2.14 FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN A CABIN FIRING SWITCH PRESSED AND RELEASED

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

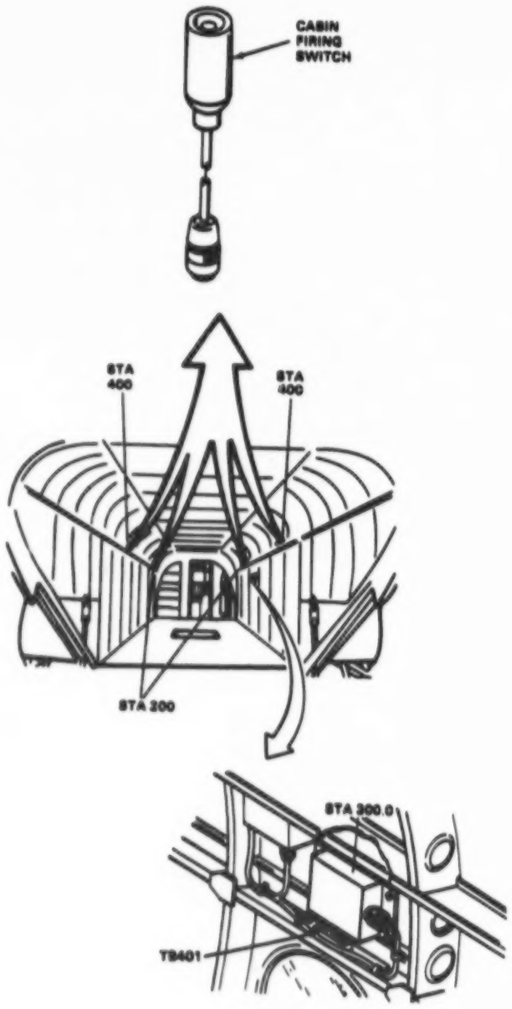
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician (2)

References:
TM 9-1095-206-13&P
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



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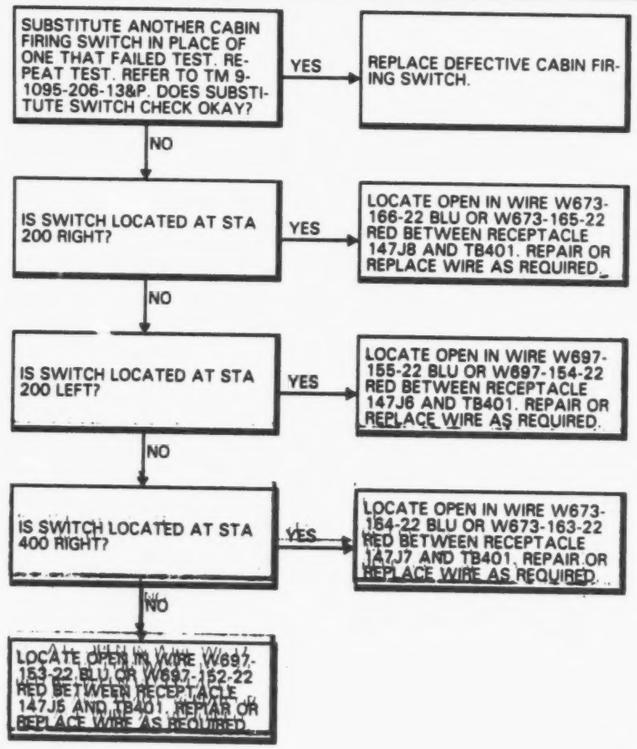
16-2.14 FLARE COUNTER OR TEST SET LIGHTS DO NOT CHANGE WHEN A CABIN FIRING SWITCH PRESSED AND RELEASED (Continued)


SUBSTITUTE ANOTHER CABIN FIRING SWITCH IN PLACE OF ONE THAT FAILED TEST. REPEAT TEST. REFER TO TM 9-1095-206-13&P. DOES SUBSTITUTE SWITCH CHECK OKAY?
YES
REPLACE DEFECTIVE CABIN FIRING SWITCH.
NO
IS SWITCH LOCATED AT STA 200 RIGHT?
YES
LOCATE OPEN IN WIRE W673-166-22 BLU OR W673-165-22 RED BETWEEN RECEPTACLE 147J8 AND TB401. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS SWITCH LOCATED AT STA 200 LEFT?
YES
LOCATE OPEN IN WIRE W697-155-22 BLU OR W697-154-22 RED BETWEEN RECEPTACLE 147J6 AND TB401. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS SWITCH LOCATED AT STA 400 RIGHT?
YES
LOCATE OPEN IN WIRE W673-164-22 BLU OR W673-163-22 RED BETWEEN RECEPTACLE 1A7J7 AND TB401. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W697-153-22 BLU OR W697-152-22 RED BETWEEN RECEPTACLE 147J5 AND TB401. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

16-2.15 FLARE COUNTER DOES NOT INDICATE 00 WHEN RIPPLE FIRE SWITCH IS HELD UP

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

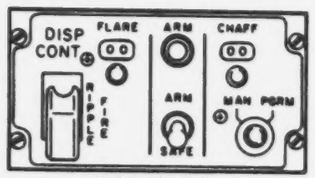
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

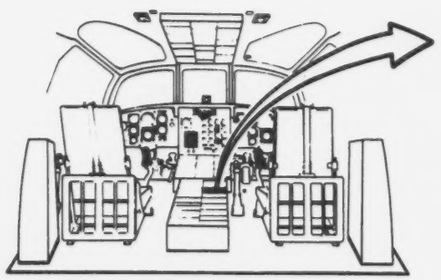
Personnel Required:
Aircraft Electrician (2)

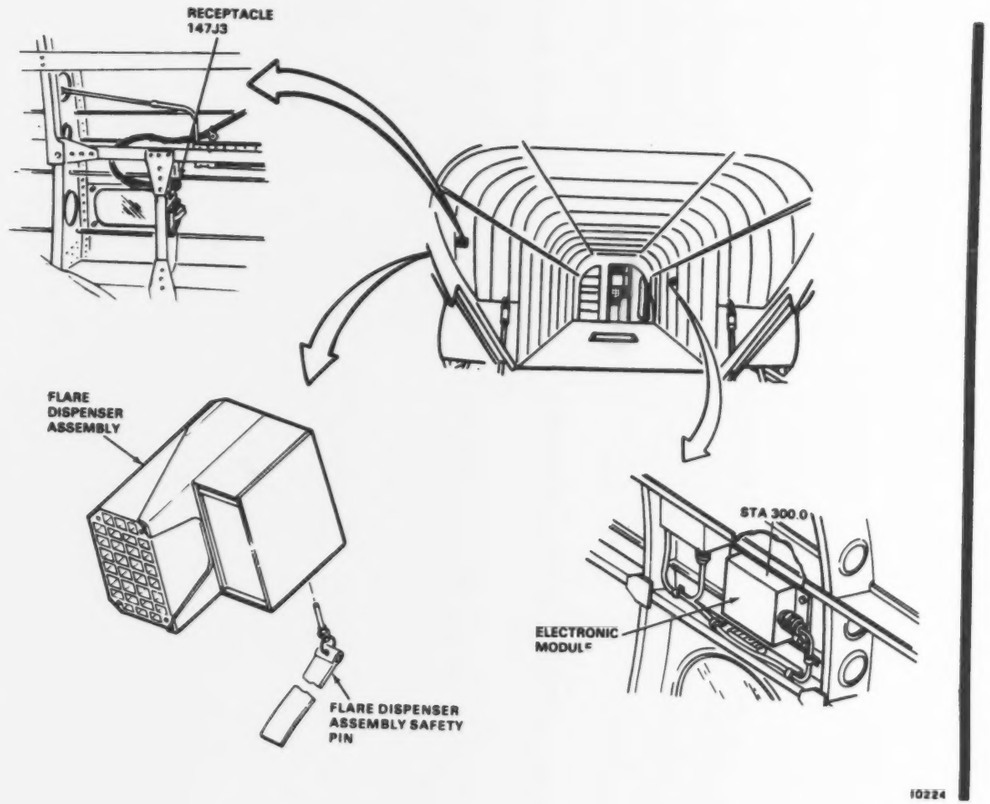
References:
TM 9-1095-206-13&P
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Connected
Electrical Power On
Hydraulic Power Off



DISP CONT PANEL


COCKPIT



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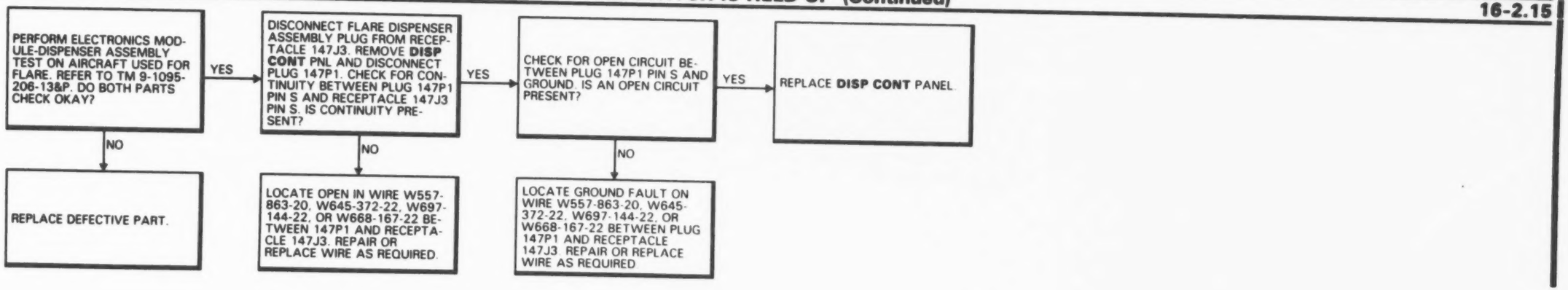
PERFORM ELECTRONICS MODULE-DISPENSER ASSEMBLY TEST ON AIRCRAFT USED FOR FLARE. REFER TO TM 9-1095-206-13&P. DO BOTH PARTS CHECK OKAY?
YES
NO
REPLACE DEFECTIVE PART.
DISCONNECT FLARE DISPENSER ASSEMBLY PLUG FROM RECEPTACLE 147J3. REMOVE DISP CONT PNL AND DISCONNECT PLUG 147P1. CHECK FOR CONTINUITY BETWEEN PLUG 147P1 PIN S AND RECEPTACLE 147J3 PIN S. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W557-863-20, W645-372-22, W697-144-22, OR W668-167-22 BETWEEN 147P1 AND RECEPTACLE 147J3. REPAIR OR REPLACE WIRE AS REQUIRED.
CHECK FOR OPEN CIRCUIT BETWEEN PLUG 147P1 PIN S AND GROUND. IS AN OPEN CIRCUIT PRESENT?
YES
NO
LOCATE GROUND FAULT ON WIRE W557-863-20, W645-372-22, W697-144-22, OR W668-167-22 BETWEEN PLUG 147P1 AND RECEPTACLE 147J3. REPAIR OR REPLACE WIRE AS REQUIRED
REPLACE DISP CONT PANEL.

END OF TASK

CHAPTER 17

EMERGENCY EQUIPMENT TROUBLESHOOTING

CHAPTER 17
EMERGENCY EQUIPMENT TROUBLESHOOTING

CHAPTER OVERVIEW

Chapter 17 contains procedures for Emergency Equipment troubleshooting. Emergency equipment system failure symptom is listed below. Included in this Chapter are locations and views of all electrical connectors, receptacles, relays, and ground connections for Emergency Equipment system.

Refer to TM 55-1520-240-23 for required Emergency Equipment system maintenance procedures.

SYSTEM	PARA
EMERGENCY EXIT LIGHTS	17-1

FAILURE SYMPTOM LIST
EMERGENCY EXIT LIGHTS

SYMPTOM	TASK
CHARGE INDICATOR LAMPS ON ONE OR MORE EMERGENCY EXIT LIGHTS DO NOT COME ON WHEN SWITCH IS SET TO ARM	17-1.3
CHARGE INDICATOR LAMPS ON ONE OR MORE EMERGENCY EXIT LIGHTS DO NOT COME ON WHEN SWITCH IS AT DISARM	17-1.3
EMERGENCY EXIT LIGHT MAIN LAMPS COME ON WHEN SWITCH IS AT ARM	17-1.3

SYMPTOM	TASK
EMERGENCY EXIT LIGHT MAIN LAMPS DO NOT COME ON WHEN SWITCH IS AT TEST	17-1.3

SYMPTOM	TASK
ONE OR MORE EMERGENCY EXIT LIGHTS WILL NOT GO OUT WHEN SWITCH IS SET TO DISARM	17-1.3

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EMERGENCY SYSTEM ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST

REF DESIG	PART NUMBER	TYPE	MATE WITH/LOCATION	STATION LOCATION FS	WL	BL
GD 119		151	AFT CROWN — RAMP	594	50	24L
GD 120		151	AFT CROWN	482	50	15R
GD 168		151	LH CABIN — ESCAPE HATCH	150	30	50L
GD 169		151	RH CABIN — CABIN DOOR	175	50	50R
129P1	MS3476W10-6S	15	INERTIA SWITCH	482	50	15R
300J1	M83723-74A2041N	40	NO. 1 PDP			
300P1	M83723-75A2041N	40	NO. 1 PDP			
300J19	M83723-73A2041N	40	OVERHEAD PANEL — COCKPIT			
300P19	M83723-76A2041N	40	OVERHEAD PANEL — COCKPIT			
300J20	M83723-74A2461N	43	OVERHEAD PANEL — COCKPIT			
300P20	M83723-75A2461N	43	OVERHEAD PANEL — COCKPIT			
300J45	M83723-73A2461N	43	HEATER COMPARTMENT — OVHD	105	40	30R
300P45	M83723-76A2461N	43	HEATER COMPARTMENT — OVHD	105	40	30R
300J47	M83723-74A2461N	43	HEATER COMPARTMENT — OVHD	105	40	30R
300P47	M83723-75A2461N	43	HEATER COMPARTMENT — OVHD	105	40	30R
300J51	M83723-74A2461N	43	AFT CROWN	460	45	20R
300P51	M83723-75A2461N	43	AFT CROWN	460	45	20R

EMERGENCY EQUIPMENT ELECTRICAL COMPONENT LOCATION AND CONFIGURATION LIST (Continued)

RECEPTACLE

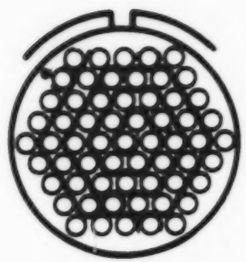
15

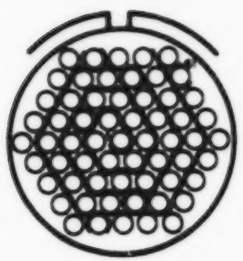
PLUG

15

GND STUD

151





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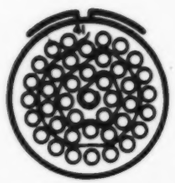

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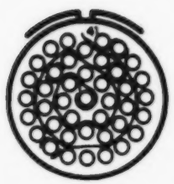

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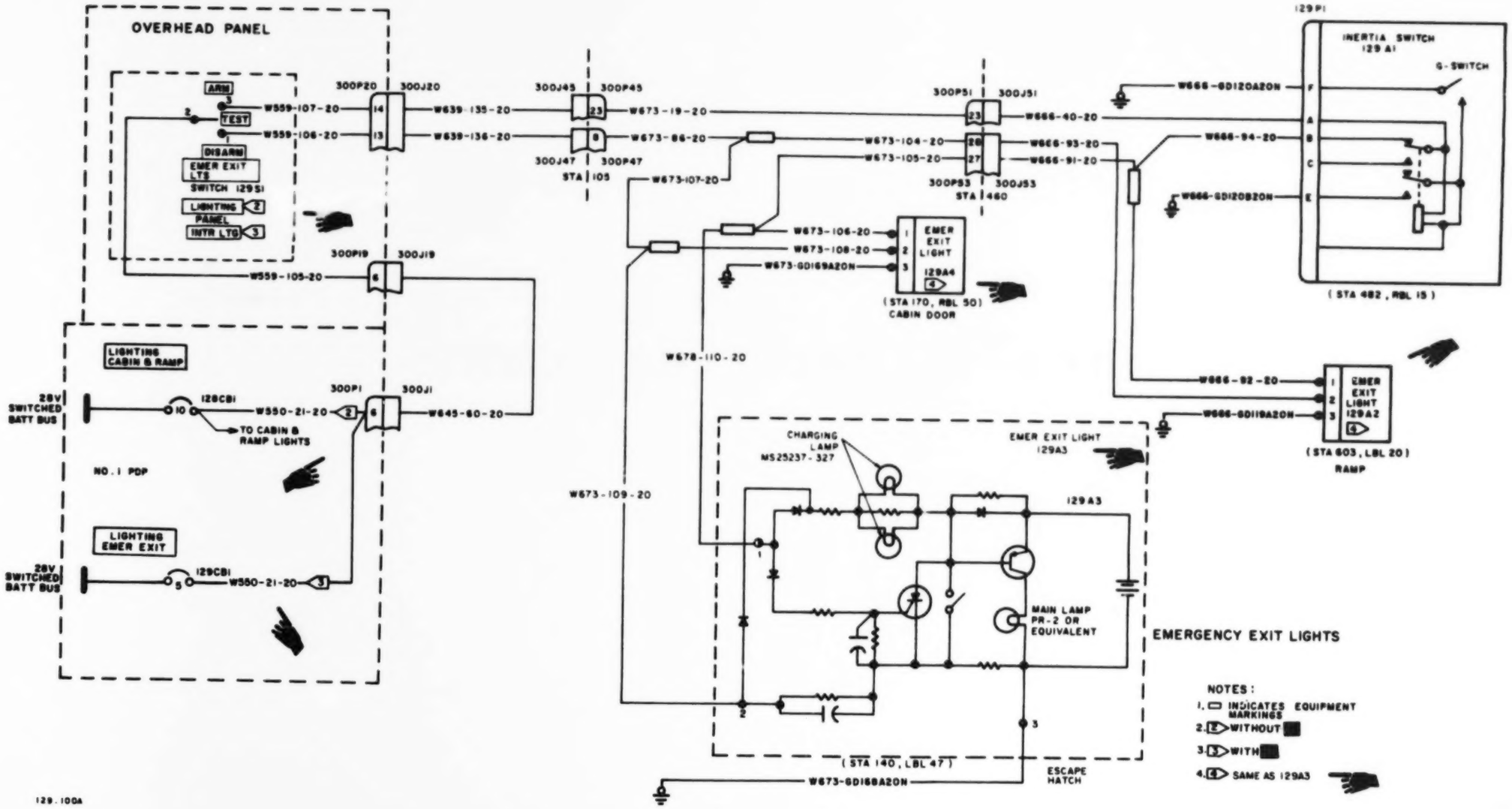
17-1 EMERGENCY EXIT LIGHTS


OVERHEAD PANEL
ARM
TEST
DISARM
EMER EXIT LTS SWITCH 129S1
LIGHTING PANEL
INTR LTG
W559-107-20
W559-106-20
W559-105-20
300P20
300J20
300P19
300J19
W639-135-20
W639-136-20
300J45
300P45
300J47
300P47
STA 105
W673-19-20
W673-86-20
W673-107-20
300P51
300J51
300P53
300J53
STA 460
W673-104-20
W673-105-20
W673-106-20
W673-108-20
W673-GD169A2ON
EMER EXIT LIGHT
129A4
(STA 170, RBL 50)
CABIN DOOR
W678-110-20
W673-109-20
W666-GD120A2ON
W666-94-20
W666-GD120B2ON
W666-40-20
W666-93-20
W666-91-20
129P1
INERTIA SWITCH 129A1
G-SWITCH
(STA 482, RBL 15)
W666-92-20
W666-GD119A2ON
EMER EXIT LIGHT 129A2
(STA 603, LBL 20)
RAMP
LIGHTING CABIN & RAMP
28V SWITCHED BATT BUS
128CB1
W550-21-20
TO CABIN & RAMP LIGHTS
300P1
300J1
W645-60-20
NO. 1 PDP
LIGHTING EMER EXIT
129CB1
CHARGING LAMP MS25237-327
EMER EXIT LIGHT 129A3
129A3
MAIN LAMP PR-2 OR EQUIVALENT
(STA 140, LBL 47)
ESCAPE HATCH
W673-GD168A2ON
EMERGENCY EXIT LIGHTS
NOTES:
1. ▭ INDICATES EQUIPMENT MARKINGS
2. 2 WITHOUT ■
3. 3 WITH ■
4. 4 SAME AS 129A3
129.100A
694

17-1.2 EMERGENCY EXIT LIGHTS VISUAL CHECK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

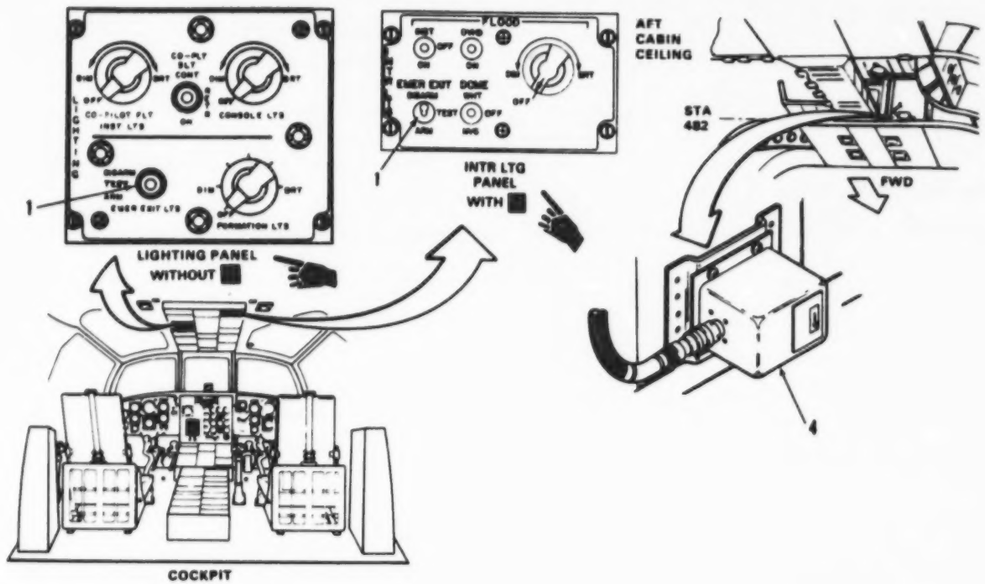
Personnel Required:
Aircraft Electrician

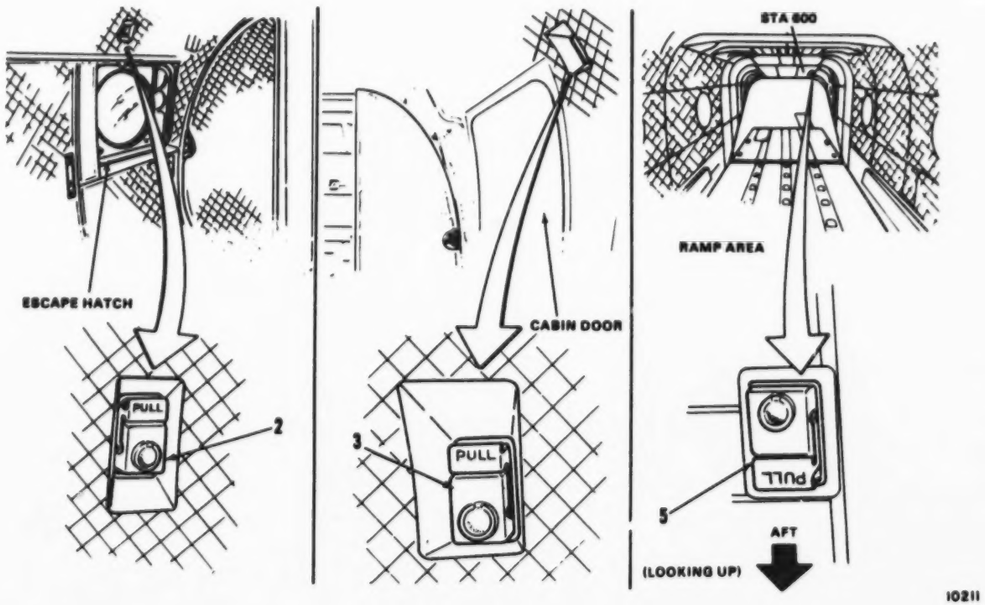
References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

TASK	RESULT
1. **Check EMER EXIT LTS or EMER EXIT switch (1).**	If switch (1) is loose or damaged, tighten or replace it as required.
2. **Check escape hatch emergency exit light (2).**	If emergency exit light (2) is loose or damaged, tighten or replace it as required.
3. **Check cabin door emergency exit light (3).**	If emergency exit light (3) is loose or damaged, tighten or replace it as required.
4. **Check inertia switch (4) at sta 482, bl 15R.**	If inertia switch (4) is loose or damaged, repair or replace it. If connector is loose or damaged, tighten or replace it. If wires to connector are broken or damaged, repair or replace wires as required.
5. **Check ramp emergency exit light (5).**	If emergency exit light (5) is loose or damaged, tighten or replace it as required.
6. **Check emergency exit lights (2, 3, 4, and 5) PULL handles.**	If PULL handles are not recessed into body of exit lights (2, 3, 4, and 5) remove and reinstall lights pushing PULL handles against light assembly.

FOLLOW-ON MAINTENANCE:
None





END OF TASK

17-1.3 EMERGENCY EXIT LIGHTS OPERATIONAL CHECK

INITIAL SETUP

Applicable Configurations:
All

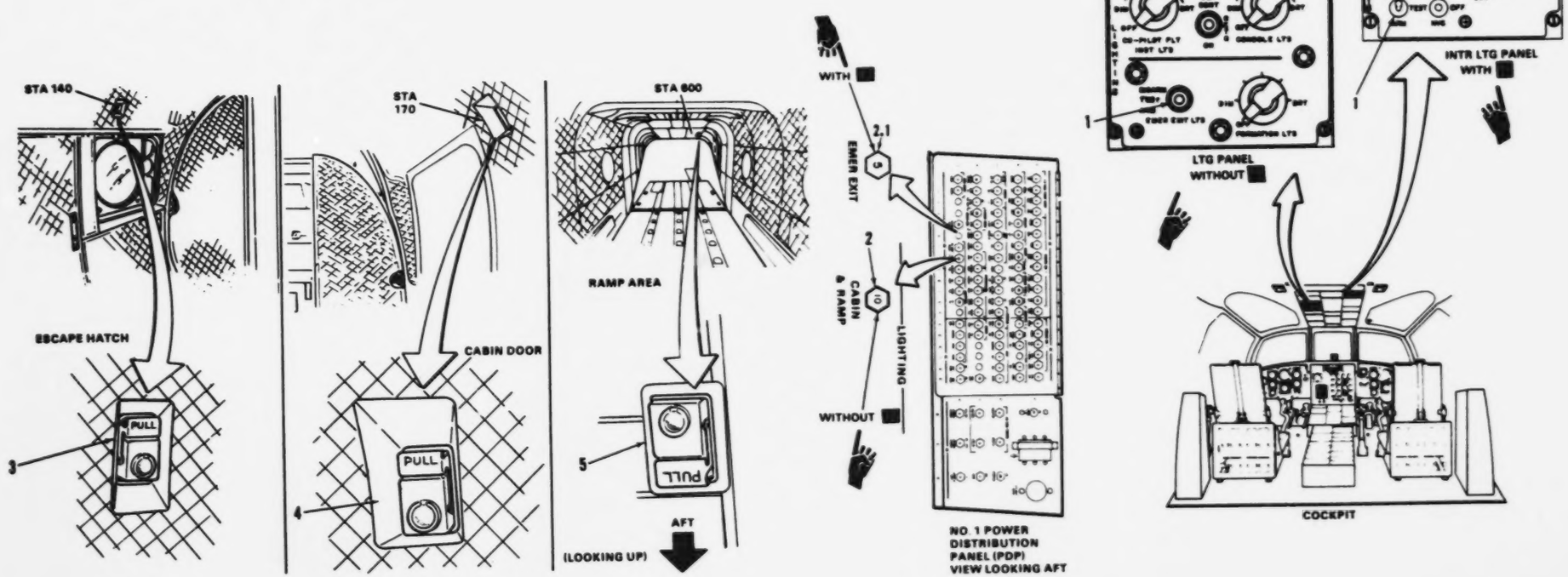
Tools:
None

Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Electrical Power Off
Battery Disconnected
Hydraulic Power Off
Visual Check of Emergency Exit Lights Performed (Task 17-1.2)



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TASK	RESULT
1. **Set EMER EXIT LTS or EMER EXIT switch (1) to DISARM.**	
2. **Connect battery.** Refer to TM 55-1520-240-23.	
3. Without 17 **check CABIN & RAMP lighting circuit breaker (2).**	If breaker (2) is open, close it. If it opens again, go to task 9-15.4.
4. With 17 **check EMER EXIT lighting circuit breaker (2.1).**	If breaker (2.1) is open, close it. If it opens again, go to task 17-1.8.
5. **Check emergency exit lights (3, 4, and 5).**	Main lamps on emergency exit lights (3, 4, and 5) shall be out. If not go to task 17-1.4. Charge indicator lamps on emergency exit lights (3, 4, and 5) shall be on. If not, go to task 17-1.8.
6. **Set EMER EXIT LTS or EMER EXIT switch (1)** to **ARM.**	Charge indicator lamps shall come on and main lamps shall be off at each emergency exit light (3, 4, and 5). If charge indicator lamps are not on, go to task 17-1.5. If main lamps are on, go to task 17-1.6.
7. **Set EMER EXIT LTS or EMER EXIT switch (1)** to **TEST.**	Main lamps shall come on and charge indicator lamps shall be off at each emergency exit light (3, 4, 5). If main lamps do not come on, go to task 17-1.7. If charge indicator lamps do not go out, replace EMER EXIT LTS or EMER EXIT switch.
8. **Set EMER EXIT LTS or EMER EXIT switch (1)** to **ARM.**	Main lamps on emergency exit lights (3, 4, and 5) shall go out. If not, go to task 17-1.4. Charge indicator lamps on emergency exit lights (3, 4, and 5) shall be on. If not go to task 17-1.5.

NOTE

Leave EMER EXIT LTS switch at ARM for 10 minutes before doing next step.

CAUTION

EMER EXIT LTS or EMER EXIT switch must be at DISARM when electrical power is removed. If switch is in ARM and battery switch is turned off, exit lights will come on and discharge internal batteries.

TASK	RESULT
9. Set EMER EXIT LTS or EMER EXIT switch (1) to DISARM.	Main lamps on emergency exit lights (3, 4, and 5) shall go out If not, go to task 17-1.4. Charge indicator lamps on emergency exit lights (3, 4, and 5) shall be on. If not, go to task 17-1.8.

FOLLOW-ON MAINTENANCE:
TM 55-1520-240-23:
Battery Disconnected

END OF TASK

17-1.4 ONE OR MORE EMERGENCY EXIT LIGHTS WILL NOT GO OUT WHEN SWITCH IS SET TO DISARM 17-1.4

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

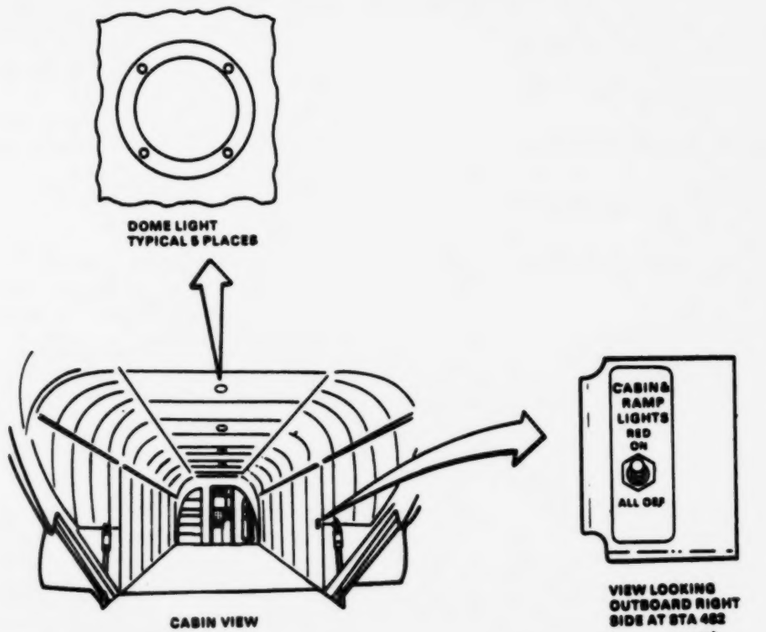
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

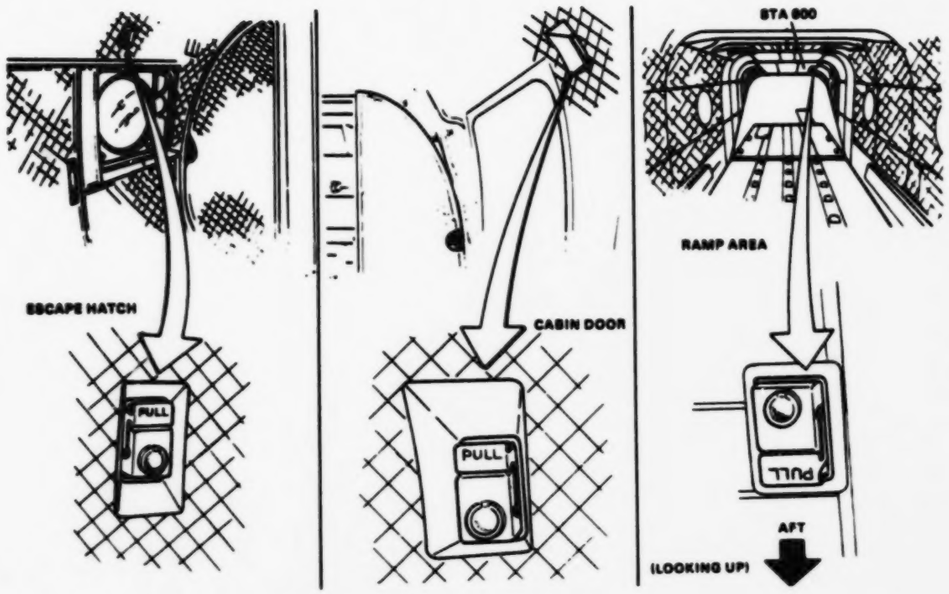
Materials:
None

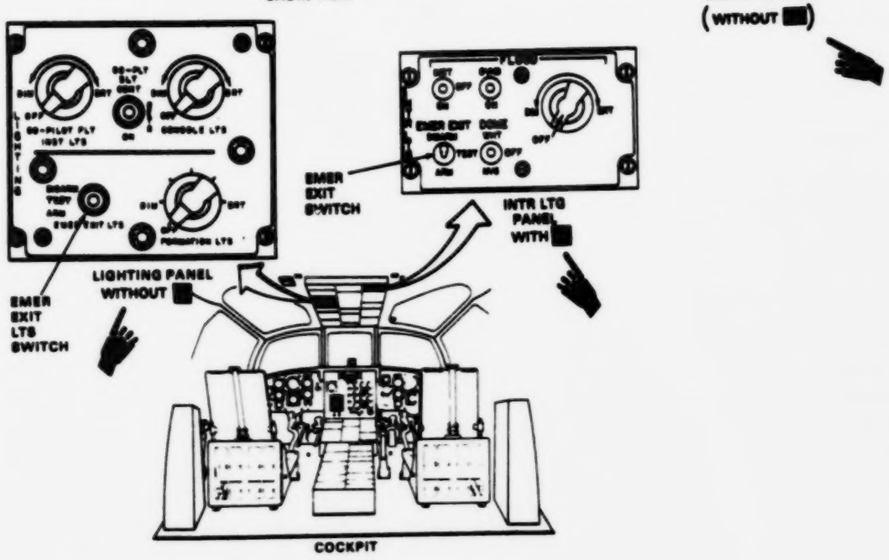
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Electrical Power On
Battery Connected







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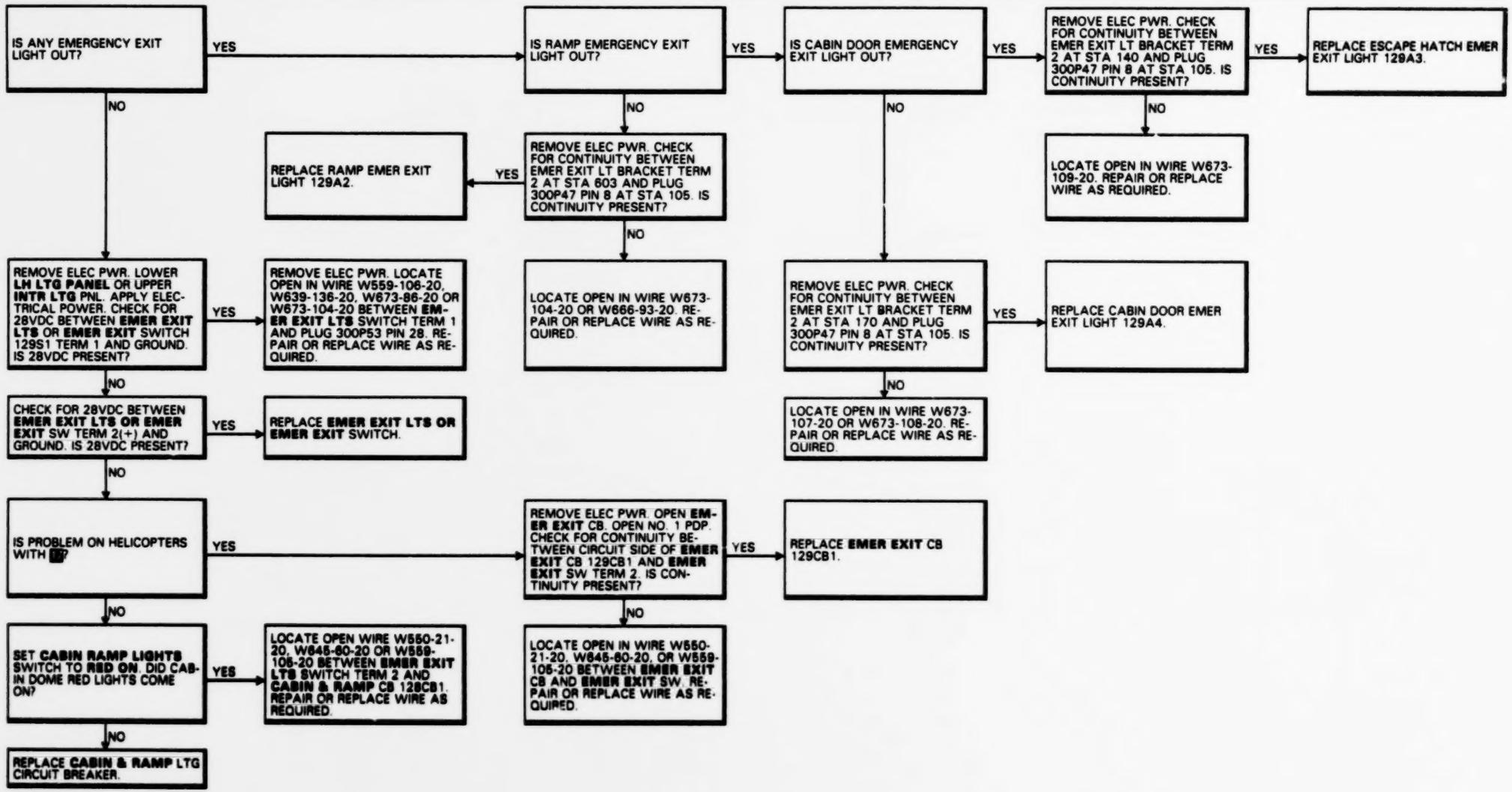
17-1.4 ONE OR MORE EMERGENCY EXIT LIGHTS WILL NOT GO OUT WHEN SWITCH IS SET TO DISARM (Continued)


IS ANY EMERGENCY EXIT LIGHT OUT?
YES
IS RAMP EMERGENCY EXIT LIGHT OUT?
YES
IS CABIN DOOR EMERGENCY EXIT LIGHT OUT?
YES
REMOVE ELEC PWR. CHECK FOR CONTINUITY BETWEEN EMER EXIT LT BRACKET TERM 2 AT STA 140 AND PLUG 300P47 PIN 8 AT STA 105. IS CONTINUITY PRESENT?
YES
REPLACE ESCAPE HATCH EMER EXIT LIGHT 129A3.
NO
NO
NO
LOCATE OPEN IN WIRE W673-109-20. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE RAMP EMER EXIT LIGHT 129A2.
YES
REMOVE ELEC PWR. CHECK FOR CONTINUITY BETWEEN EMER EXIT LT BRACKET TERM 2 AT STA 603 AND PLUG 300P47 PIN 8 AT STA 105. IS CONTINUITY PRESENT?
NO
REMOVE ELEC PWR. LOWER LH LTG PANEL OR UPPER INTR LTG PNL. APPLY ELECTRICAL POWER. CHECK FOR 28VDC BETWEEN EMER EXIT LTS OR EMER EXIT SWITCH 129S1 TERM 1 AND GROUND. IS 28VDC PRESENT?
YES
REMOVE ELEC PWR. LOCATE OPEN IN WIRE W559-106-20, W639-136-20, W673-86-20 OR W673-104-20 BETWEEN EMER EXIT LTS SWITCH TERM 1 AND PLUG 300P53 PIN 28. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W673-104-20 OR W666-93-20. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. CHECK FOR CONTINUITY BETWEEN EMER EXIT LT BRACKET TERM 2 AT STA 170 AND PLUG 300P47 PIN 8 AT STA 105. IS CONTINUITY PRESENT?
YES
REPLACE CABIN DOOR EMER EXIT LIGHT 129A4.
NO
NO
CHECK FOR 28VDC BETWEEN EMER EXIT LTS OR EMER EXIT SW TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE EMER EXIT LTS OR EMER EXIT SWITCH.
LOCATE OPEN IN WIRE W673-107-20 OR W673-108-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS PROBLEM ON HELICOPTERS WITH [redacted]?
YES
REMOVE ELEC PWR. OPEN EMER EXIT CB. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF EMER EXIT CB 129CB1 AND EMER EXIT SW TERM 2. IS CONTINUITY PRESENT?
YES
REPLACE EMER EXIT CB 129CB1.
NO
NO
SET CABIN RAMP LIGHTS SWITCH TO RED ON. DID CABIN DOME RED LIGHTS COME ON?
YES
LOCATE OPEN WIRE W550-21-20, W646-60-20 OR W559-105-20 BETWEEN EMER EXIT LTS SWITCH TERM 2 AND CABIN & RAMP CB 128CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W550-21-20, W646-60-20, OR W559-105-20 BETWEEN EMER EXIT CB AND EMER EXIT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CABIN & RAMP LTG CIRCUIT BREAKER.

END OF TASK

17-1.5 CHARGE INDICATOR LAMPS ON ONE OR MORE EMERGENCY EXIT LIGHTS DO NOT COME ON WHEN SWITCH IS SET TO ARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

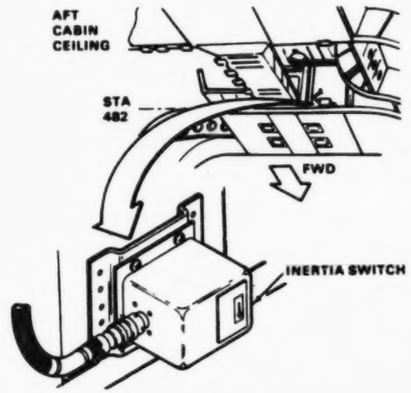
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

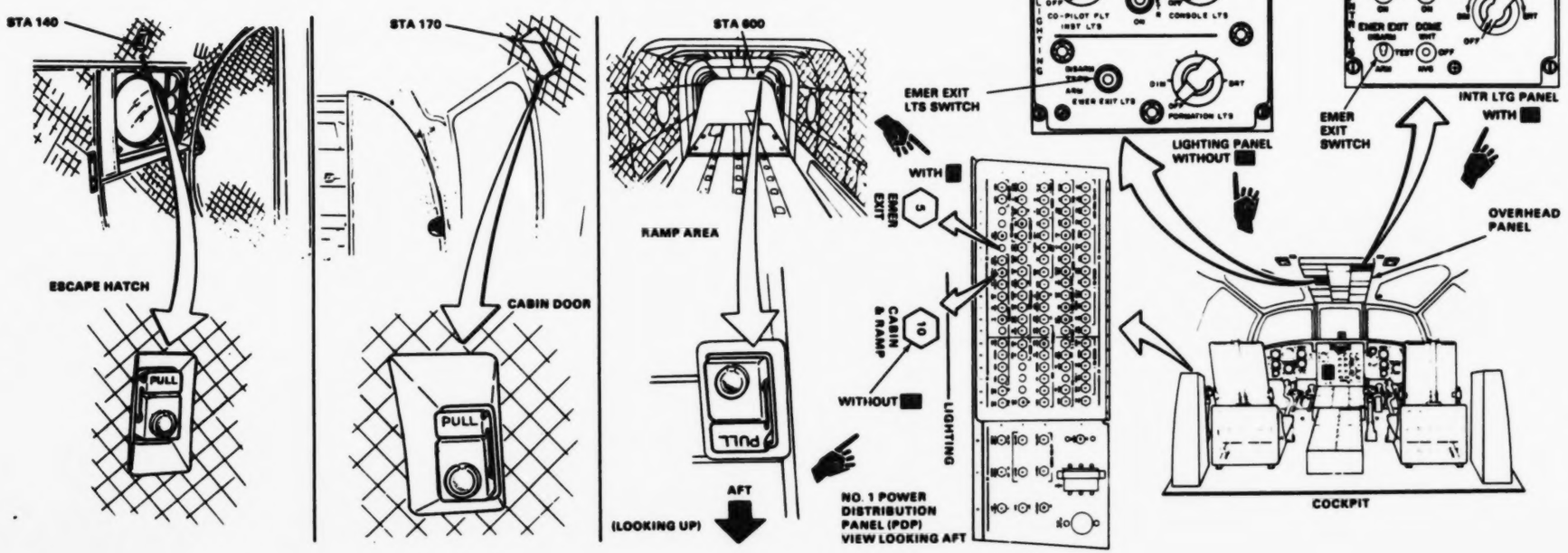
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Electrical Power On
Battery Power On
Hydraulic Power Off





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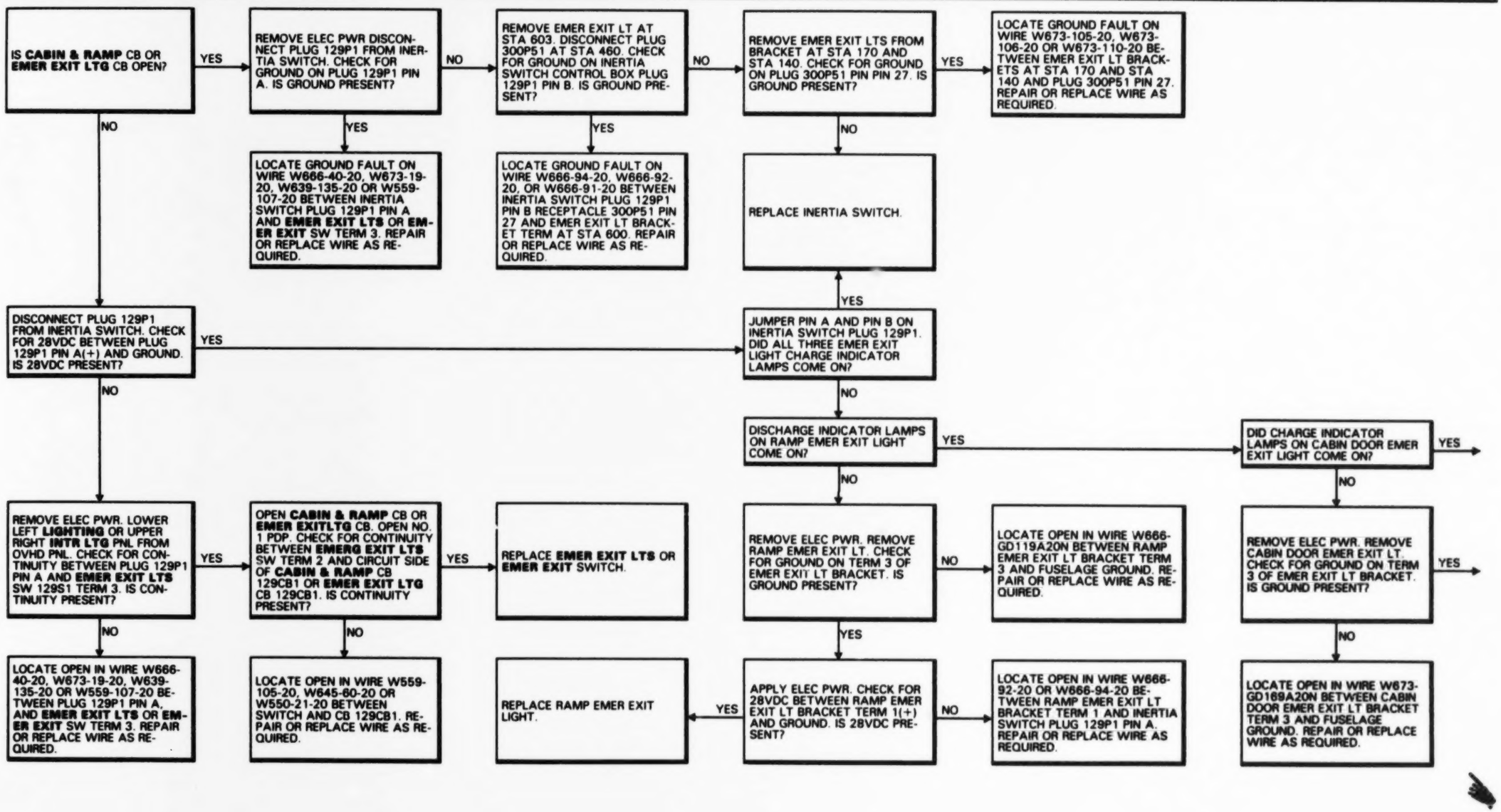
17-1.5 CHARGE INDICATOR LAMPS ON ONE OR MORE EMERGENCY EXIT LIGHTS DO NOT COME ON WHEN SWITCH IS SET TO ARM (Continued)


IS CABIN & RAMP CB OR EMER EXIT LTG CB OPEN?
YES
NO
REMOVE ELEC PWR DISCONNECT PLUG 129P1 FROM INERTIA SWITCH. CHECK FOR GROUND ON PLUG 129P1 PIN A. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-40-20, W673-19-20, W639-135-20 OR W559-107-20 BETWEEN INERTIA SWITCH PLUG 129P1 PIN A AND EMER EXIT LTS OR EMER EXIT SW TERM 3. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE EMER EXIT LT AT STA 603. DISCONNECT PLUG 300P51 AT STA 460. CHECK FOR GROUND ON INERTIA SWITCH CONTROL BOX PLUG 129P1 PIN B. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W666-94-20, W666-92-20, OR W666-91-20 BETWEEN INERTIA SWITCH PLUG 129P1 PIN B RECEPTACLE 300P51 PIN 27 AND EMER EXIT LT BRACKET TERM AT STA 600. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REMOVE EMER EXIT LTS FROM BRACKET AT STA 170 AND STA 140. CHECK FOR GROUND ON PLUG 300P51 PIN PIN 27. IS GROUND PRESENT?
YES
LOCATE GROUND FAULT ON WIRE W673-105-20, W673-106-20 OR W673-110-20 BETWEEN EMER EXIT LT BRACKETS AT STA 170 AND STA 140 AND PLUG 300P51 PIN 27. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE INERTIA SWITCH.
YES
DISCONNECT PLUG 129P1 FROM INERTIA SWITCH. CHECK FOR 28VDC BETWEEN PLUG 129P1 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
JUMPER PIN A AND PIN B ON INERTIA SWITCH PLUG 129P1. DID ALL THREE EMER EXIT LIGHT CHARGE INDICATOR LAMPS COME ON?
NO
DISCHARGE INDICATOR LAMPS ON RAMP EMER EXIT LIGHT COME ON?
YES
DID CHARGE INDICATOR LAMPS ON CABIN DOOR EMER EXIT LIGHT COME ON?
YES
NO
REMOVE ELEC PWR. LOWER LEFT LIGHTING OR UPPER RIGHT INTR LTG PNL FROM OVHD PNL. CHECK FOR CONTINUITY BETWEEN PLUG 129P1 PIN A AND EMER EXIT LTS SW 129S1 TERM 3. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W666-40-20, W673-19-20, W639-135-20 OR W559-107-20 BETWEEN PLUG 129P1 PIN A, AND EMER EXIT LTS OR EMER EXIT SW TERM 3. REPAIR OR REPLACE WIRE AS REQUIRED.
OPEN CABIN & RAMP CB OR EMER EXITLTG CB. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN EMERG EXIT LTS SW TERM 2 AND CIRCUIT SIDE OF CABIN & RAMP CB 129CB1 OR EMER EXIT LTG CB 129CB1. IS CONTINUITY PRESENT?
YES
NO
LOCATE OPEN IN WIRE W559-105-20, W645-60-20 OR W550-21-20 BETWEEN SWITCH AND CB 129CB1. REPAIR OR REPLACE WIRE AS REQUIRED.
REPLACE EMER EXIT LTS OR EMER EXIT SWITCH.
REPLACE RAMP EMER EXIT LIGHT.
YES
REMOVE ELEC PWR. REMOVE RAMP EMER EXIT LT. CHECK FOR GROUND ON TERM 3 OF EMER EXIT LT BRACKET. IS GROUND PRESENT?
NO
LOCATE OPEN IN WIRE W666-GD119A20N BETWEEN RAMP EMER EXIT LT BRACKET TERM 3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
APPLY ELEC PWR. CHECK FOR 28VDC BETWEEN RAMP EMER EXIT LT BRACKET TERM 1(+) AND GROUND. IS 28VDC PRESENT?
NO
LOCATE OPEN IN WIRE W666-92-20 OR W666-94-20 BETWEEN RAMP EMER EXIT LT BRACKET TERM 1 AND INERTIA SWITCH PLUG 129P1 PIN A. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. REMOVE CABIN DOOR EMER EXIT LT. CHECK FOR GROUND ON TERM 3 OF EMER EXIT LT BRACKET. IS GROUND PRESENT?
YES
NO
LOCATE OPEN IN WIRE W673-GD169A20N BETWEEN CABIN DOOR EMER EXIT LT BRACKET TERM 3 AND FUSELAGE GROUND. REPAIR OR REPLACE WIRE AS REQUIRED.

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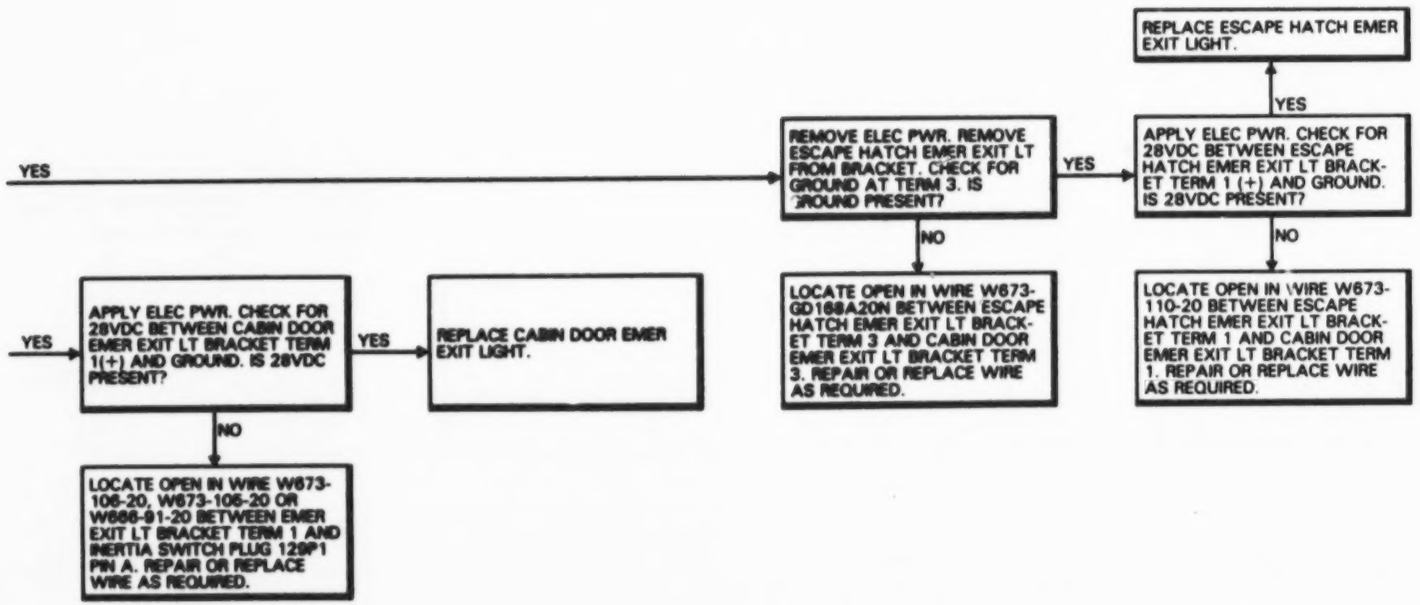
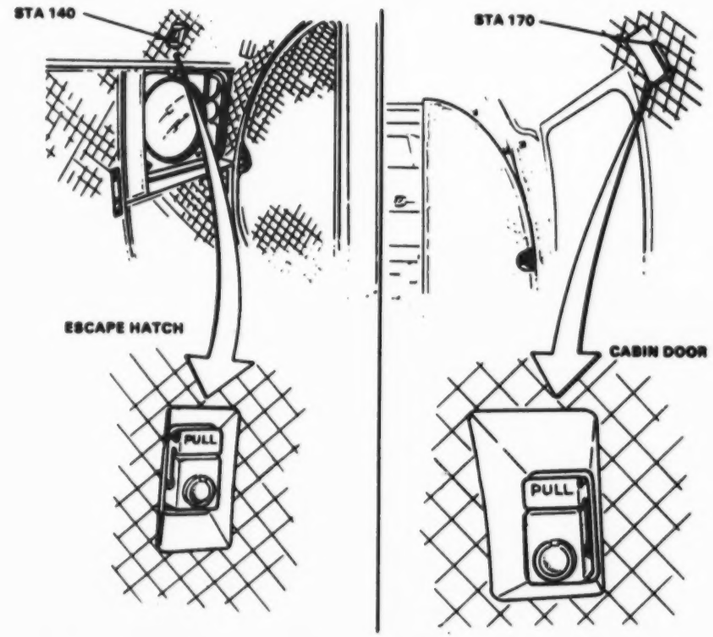

REPLACE ESCAPE HATCH EMER EXIT LIGHT.
YES
REMOVE ELEC PWR. REMOVE ESCAPE HATCH EMER EXIT LT FROM BRACKET. CHECK FOR GROUND AT TERM 3. IS GROUND PRESENT?
YES
APPLY ELEC PWR. CHECK FOR 28VDC BETWEEN ESCAPE HATCH EMER EXIT LT BRACKET TERM 1 (+) AND GROUND. IS 28VDC PRESENT?
YES
NO
NO
LOCATE OPEN IN WIRE W673-GD168A20N BETWEEN ESCAPE HATCH EMER EXIT LT BRACKET TERM 3 AND CABIN DOOR EMER EXIT LT BRACKET TERM 3. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W673-110-20 BETWEEN ESCAPE HATCH EMER EXIT LT BRACKET TERM 1 AND CABIN DOOR EMER EXIT LT BRACKET TERM 1. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
APPLY ELEC PWR. CHECK FOR 28VDC BETWEEN CABIN DOOR EMER EXIT LT BRACKET TERM 1(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE CABIN DOOR EMER EXIT LIGHT.
NO
LOCATE OPEN IN WIRE W673-106-20, W673-106-20 OR W666-91-20 BETWEEN EMER EXIT LT BRACKET TERM 1 AND INERTIA SWITCH PLUG 129P1 PIN A. REPAIR OR REPLACE WIRE AS REQUIRED.



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END OF TASK

17-1.6 EMERGENCY EXIT LIGHT MAIN LAMPS COME ON WHEN SWITCH IS AT ARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

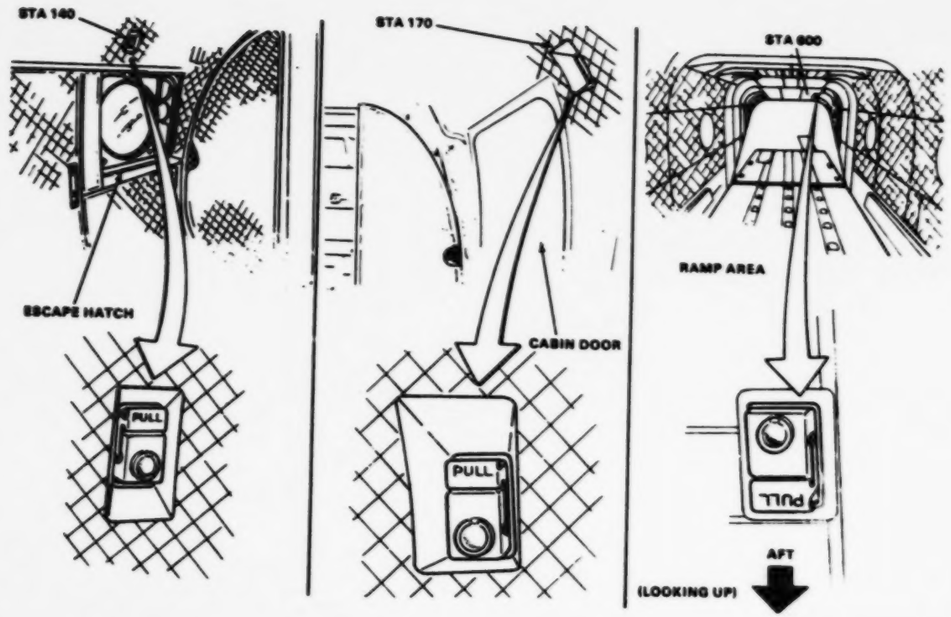
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

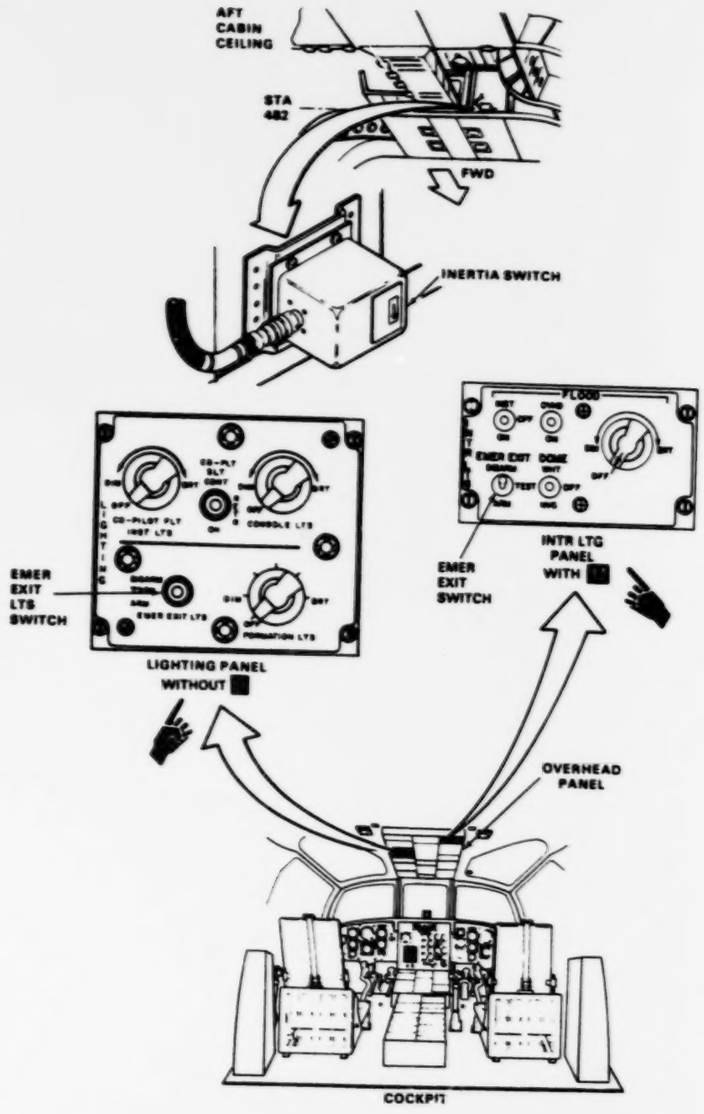
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Battery Power On
Electrical Power On
Hydraulic Power Off





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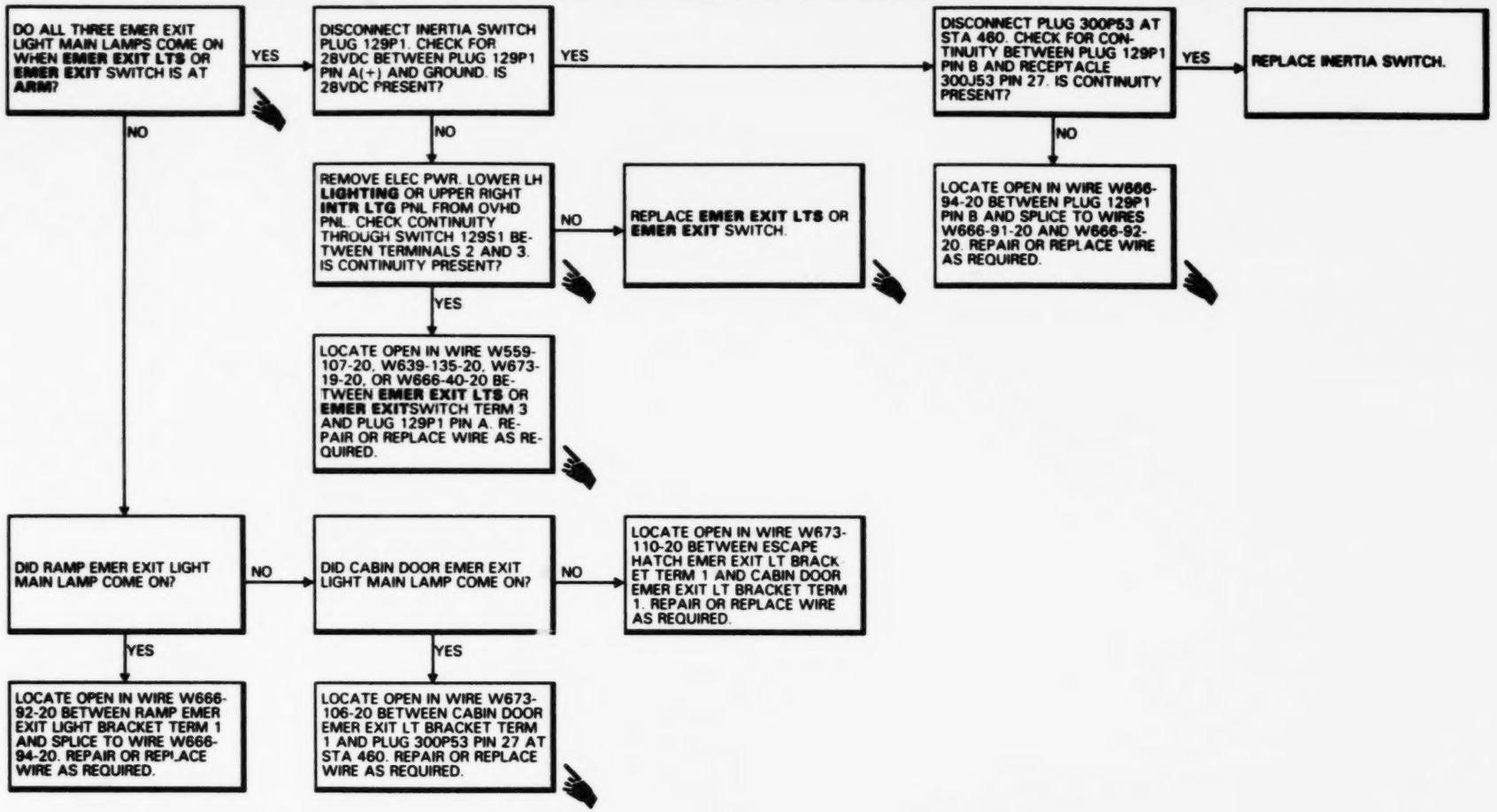

DO ALL THREE EMER EXIT LIGHT MAIN LAMPS COME ON WHEN EMER EXIT LTS OR EMER EXIT SWITCH IS AT ARM?
YES
NO
DISCONNECT INERTIA SWITCH PLUG 129P1. CHECK FOR 28VDC BETWEEN PLUG 129P1 PIN A(+) AND GROUND. IS 28VDC PRESENT?
YES
NO
DISCONNECT PLUG 300P53 AT STA 460. CHECK FOR CONTINUITY BETWEEN PLUG 129P1 PIN B AND RECEPTACLE 300J53 PIN 27. IS CONTINUITY PRESENT?
YES
REPLACE INERTIA SWITCH.
NO
LOCATE OPEN IN WIRE W666-94-20 BETWEEN PLUG 129P1 PIN B AND SPLICE TO WIRES W666-91-20 AND W666-92-20. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE ELEC PWR. LOWER LH LIGHTING OR UPPER RIGHT INTR LTG PNL FROM OVHD PNL. CHECK CONTINUITY THROUGH SWITCH 129S1 BETWEEN TERMINALS 2 AND 3. IS CONTINUITY PRESENT?
NO
REPLACE EMER EXIT LTS OR EMER EXIT SWITCH.
YES
LOCATE OPEN IN WIRE W559-107-20, W639-135-20, W673-19-20, OR W666-40-20 BETWEEN EMER EXIT LTS OR EMER EXITSWITCH TERM 3 AND PLUG 129P1 PIN A. REPAIR OR REPLACE WIRE AS REQUIRED.
DID RAMP EMER EXIT LIGHT MAIN LAMP COME ON?
NO
YES
LOCATE OPEN IN WIRE W666-92-20 BETWEEN RAMP EMER EXIT LIGHT BRACKET TERM 1 AND SPLICE TO WIRE W666-94-20. REPAIR OR REPLACE WIRE AS REQUIRED.
DID CABIN DOOR EMER EXIT LIGHT MAIN LAMP COME ON?
NO
YES
LOCATE OPEN IN WIRE W673-106-20 BETWEEN CABIN DOOR EMER EXIT LT BRACKET TERM 1 AND PLUG 300P53 PIN 27 AT STA 460. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W673-110-20 BETWEEN ESCAPE HATCH EMER EXIT LT BRACKET TERM 1 AND CABIN DOOR EMER EXIT LT BRACKET TERM 1. REPAIR OR REPLACE WIRE AS REQUIRED.

END OF TASK

17-1.7 EMERGENCY EXIT LIGHT MAIN LAMPS DO NOT COME ON WHEN SWITCH IS AT TEST

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

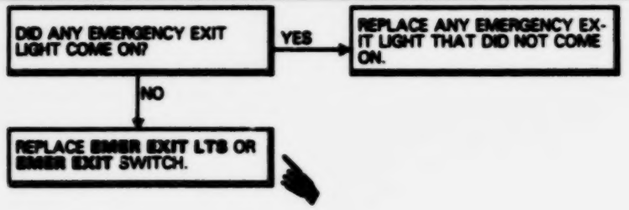
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

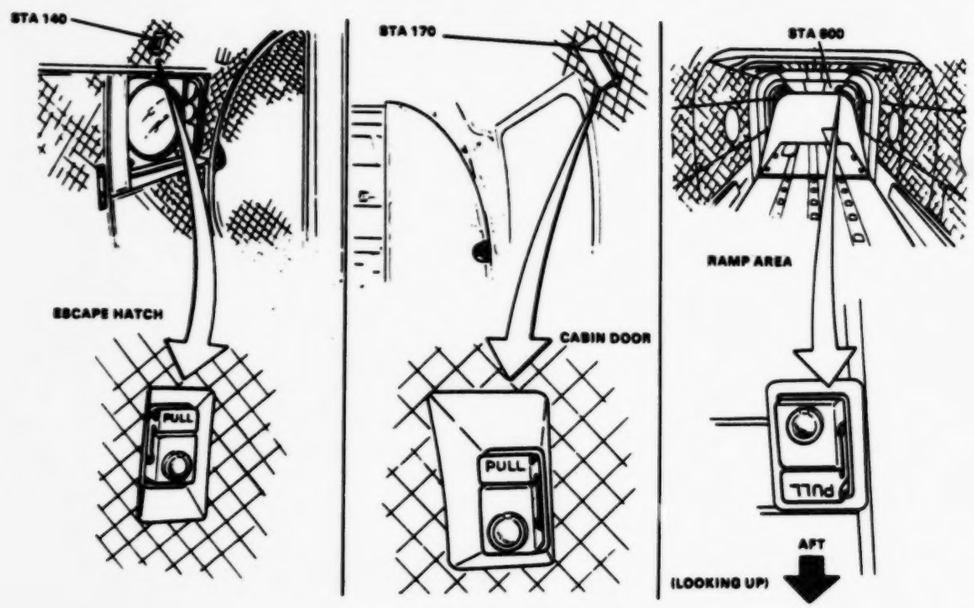
Materials:
None

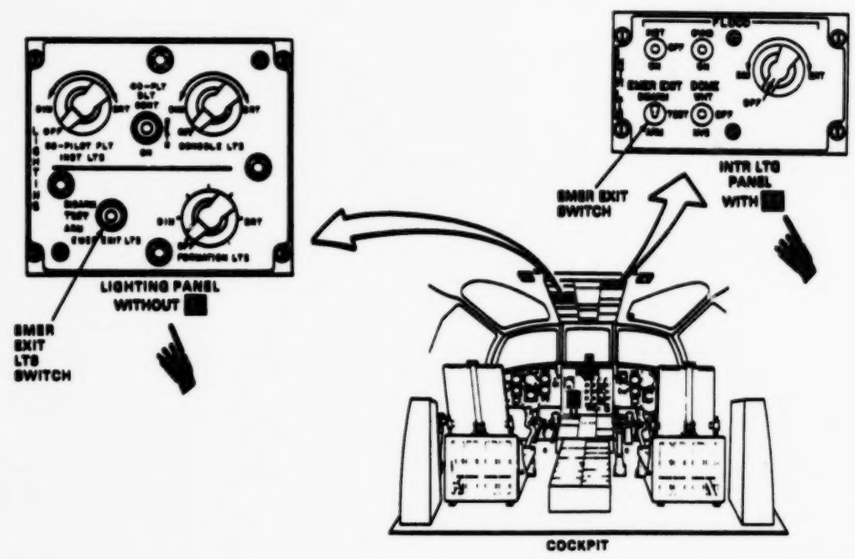
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Electrical Power On
Battery Power On


DID ANY EMERGENCY EXIT LIGHT COME ON?
YES
REPLACE ANY EMERGENCY EXIT LIGHT THAT DID NOT COME ON.
NO
REPLACE EMER EXIT LTS OR EMER EXIT SWITCH.





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END OF TASK

17-1.8 CHARGE INDICATOR LAMPS ON ONE OR MORE EMERGENCY EXIT LIGHTS DO NOT COME ON WHEN SWITCH IS AT DISARM

FAULT ISOLATION PROCEDURE

INITIAL SETUP

Applicable Configurations:
All

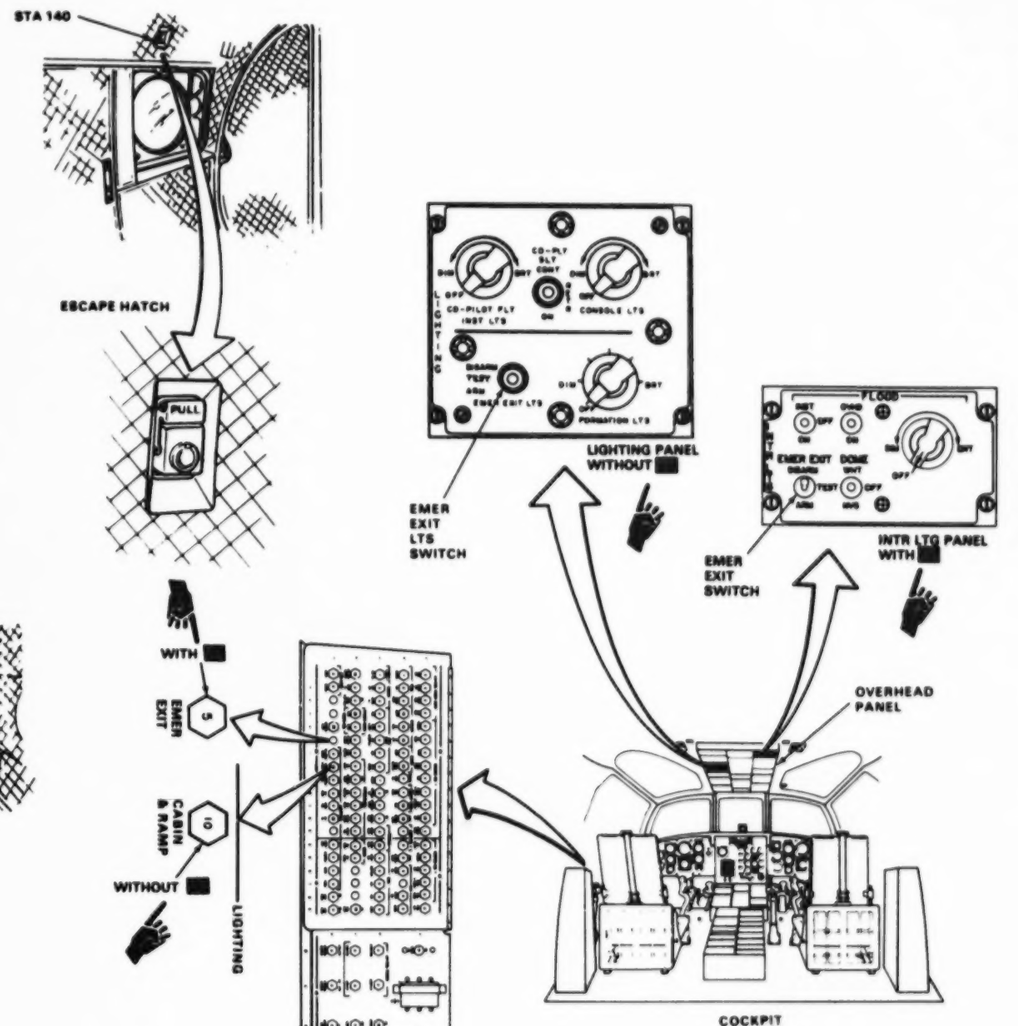
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

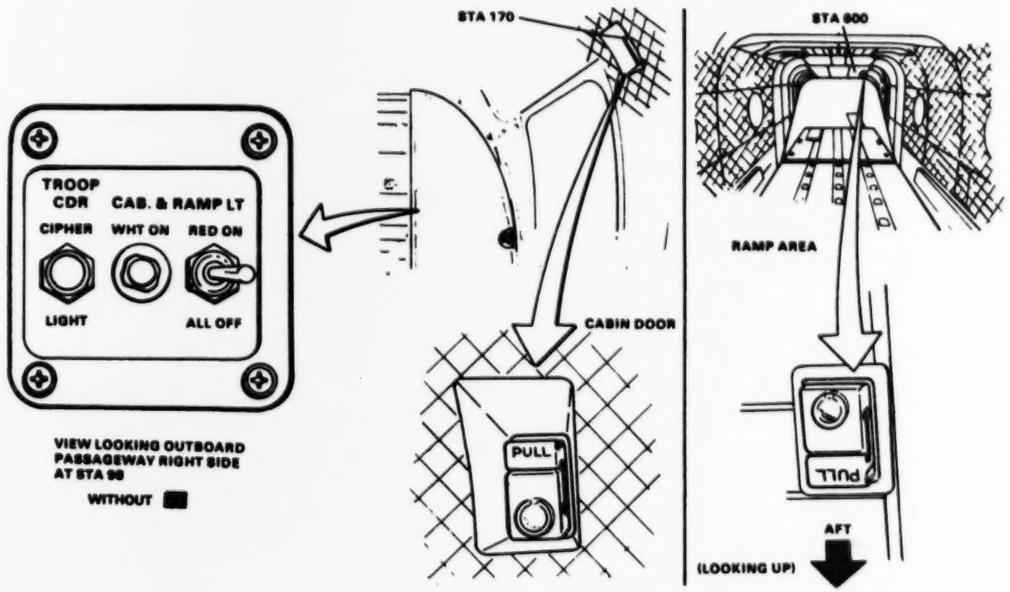
Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23

Equipment Condition:
TM 55-1520-240-23:
Electrical Power On
Battery Power On
Hydraulic Power Off





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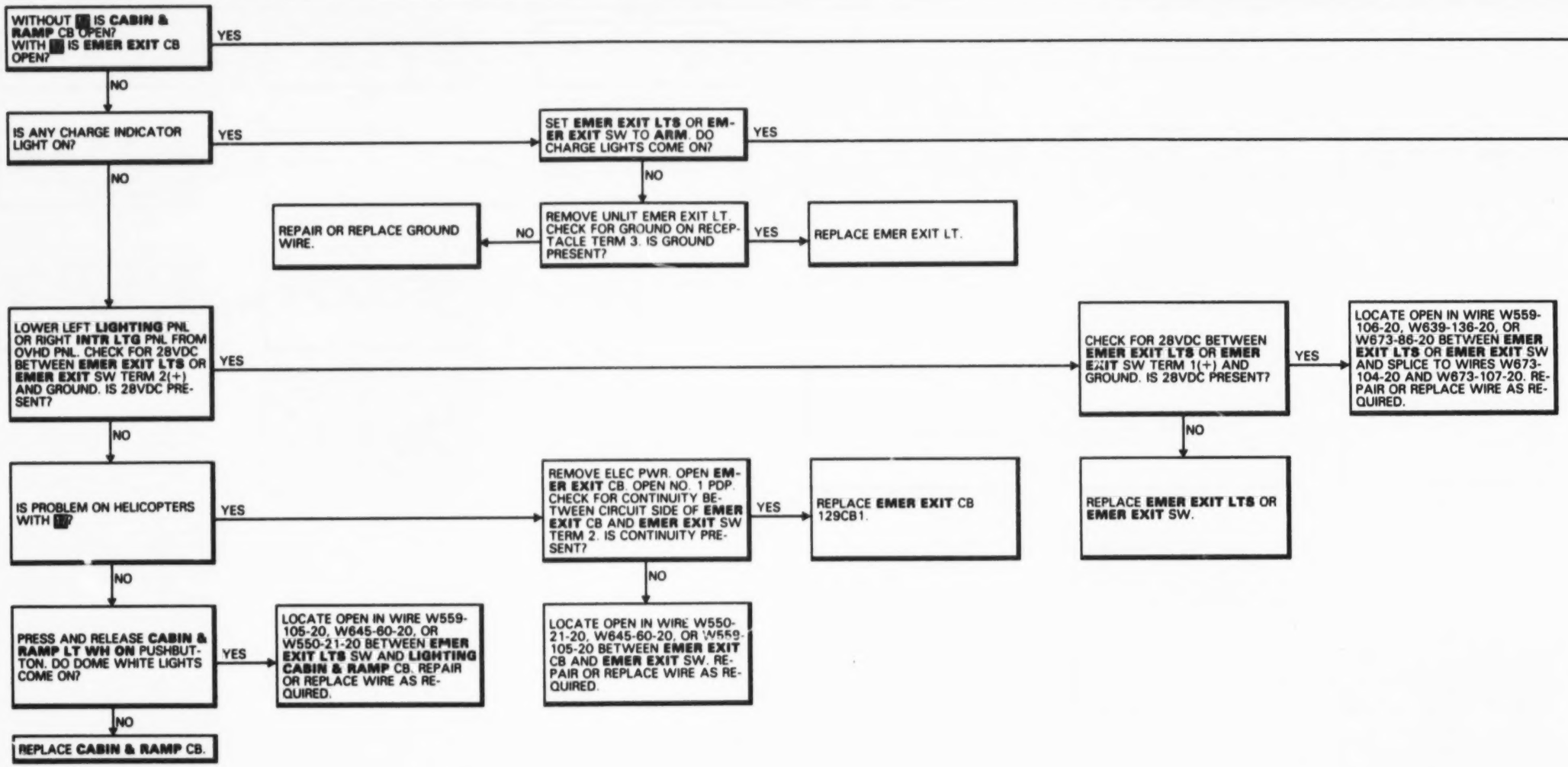
WITHOUT [redacted] IS CABIN & RAMP CB OPEN? WITH [redacted] IS EMER EXIT CB OPEN?
YES
NO
IS ANY CHARGE INDICATOR LIGHT ON?
YES
SET EMER EXIT LTS OR EMER EXIT SW TO ARM. DO CHARGE LIGHTS COME ON?
YES
NO
REMOVE UNLIT EMER EXIT LT. CHECK FOR GROUND ON RECEPTACLE TERM 3. IS GROUND PRESENT?
NO
REPAIR OR REPLACE GROUND WIRE.
YES
REPLACE EMER EXIT LT.
NO
LOWER LEFT LIGHTING PNL OR RIGHT INTR LTG PNL FROM OVHD PNL. CHECK FOR 28VDC BETWEEN EMER EXIT LTS OR EMER EXIT SW TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
CHECK FOR 28VDC BETWEEN EMER EXIT LTS OR EMER EXIT SW TERM 1(+) AND GROUND. IS 28VDC PRESENT?
YES
LOCATE OPEN IN WIRE W559-106-20, W639-136-20, OR W673-86-20 BETWEEN EMER EXIT LTS OR EMER EXIT SW AND SPLICE TO WIRES W673-104-20 AND W673-107-20. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
NO
IS PROBLEM ON HELICOPTERS WITH [redacted]?
YES
REMOVE ELEC PWR. OPEN EMER EXIT CB. OPEN NO. 1 PDP. CHECK FOR CONTINUITY BETWEEN CIRCUIT SIDE OF EMER EXIT CB AND EMER EXIT SW TERM 2. IS CONTINUITY PRESENT?
YES
REPLACE EMER EXIT CB 129CB1.
REPLACE EMER EXIT LTS OR EMER EXIT SW.
NO
NO
PRESS AND RELEASE CABIN & RAMP LT WH ON PUSHBUTTON. DO DOME WHITE LIGHTS COME ON?
YES
LOCATE OPEN IN WIRE W559-105-20, W645-60-20, OR W550-21-20 BETWEEN EMER EXIT LTS SW AND LIGHTING CABIN & RAMP CB. REPAIR OR REPLACE WIRE AS REQUIRED.
LOCATE OPEN IN WIRE W550-21-20, W645-60-20, OR W559-105-20 BETWEEN EMER EXIT CB AND EMER EXIT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
REPLACE CABIN & RAMP CB.

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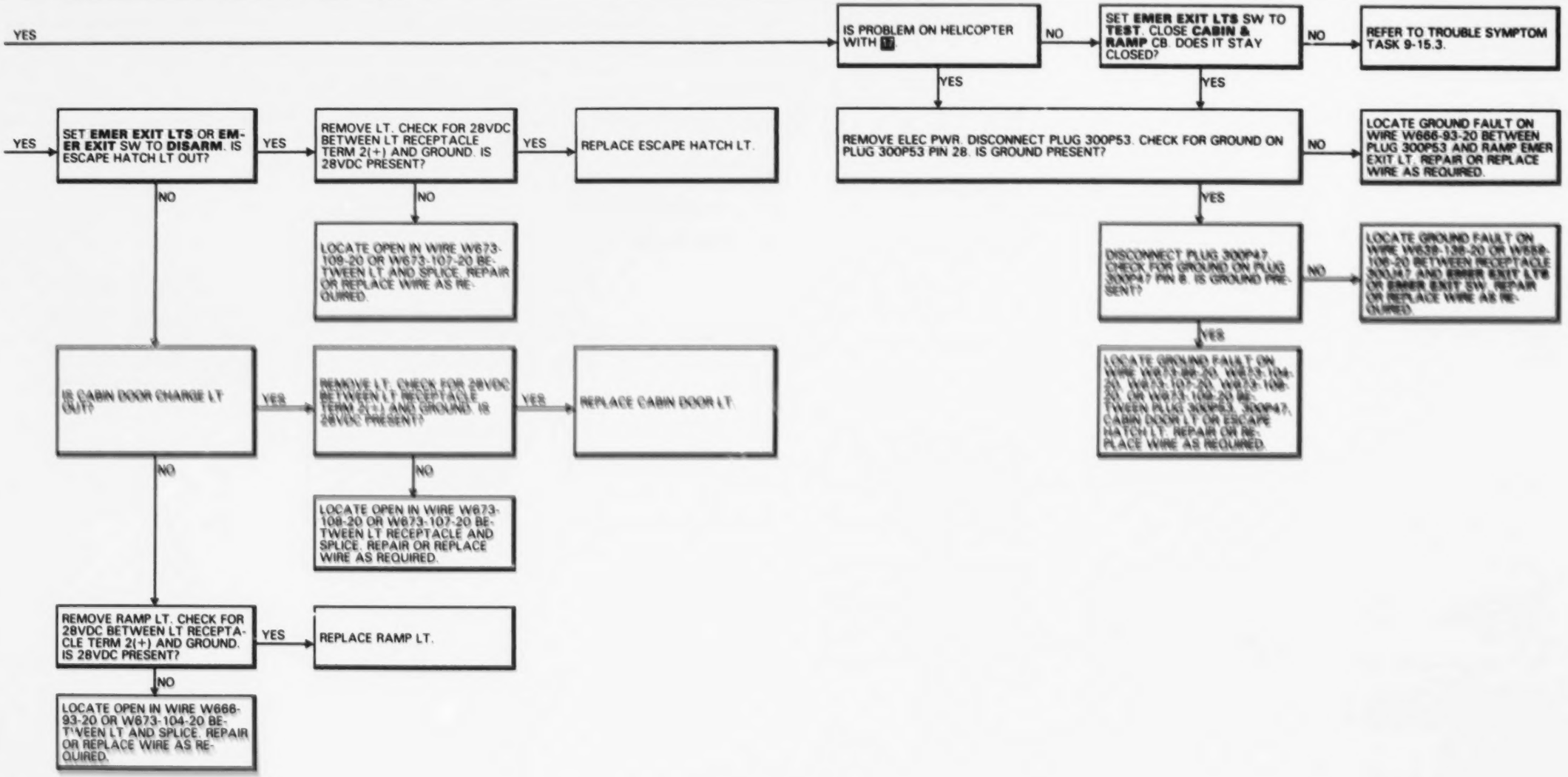
17-1.8 CHARGE INDICATOR LAMPS ON ONE OR MORE EMERGENCY EXIT LIGHTS DO NOT COME ON WHEN SWITCH IS AT DISARM (Continued)


YES
IS PROBLEM ON HELICOPTER WITH 17
NO
SET EMER EXIT LTS SW TO TEST. CLOSE CABIN & RAMP CB. DOES IT STAY CLOSED?
NO
REFER TO TROUBLE SYMPTOM TASK 9-15.3.
YES
YES
YES
SET EMER EXIT LTS OR EMER EXIT SW TO DISARM. IS ESCAPE HATCH LT OUT?
YES
REMOVE LT. CHECK FOR 28VDC BETWEEN LT RECEPTACLE TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE ESCAPE HATCH LT.
REMOVE ELEC PWR. DISCONNECT PLUG 300P53. CHECK FOR GROUND ON PLUG 300P53 PIN 28. IS GROUND PRESENT?
NO
LOCATE GROUND FAULT ON WIRE W666-93-20 BETWEEN PLUG 300P53 AND RAMP EMER EXIT LT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
LOCATE OPEN IN WIRE W673-109-20 OR W673-107-20 BETWEEN LT AND SPLICE. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
DISCONNECT PLUG 300P47. CHECK FOR GROUND ON PLUG 300P47 PIN 8. IS GROUND PRESENT?
NO
LOCATE GROUND FAULT ON WIRE W639-138-20 OR W688-108-20 BETWEEN RECEPTACLE 300J47 AND EMER EXIT LTS OR EMER EXIT SW. REPAIR OR REPLACE WIRE AS REQUIRED.
YES
LOCATE GROUND FAULT ON WIRE W673-88-20, W673-104-20, W673-107-20, W673-109-20, OR W673-109-20 BETWEEN PLUG 300P53, 300P47, CABIN DOOR LT OR ESCAPE HATCH LT. REPAIR OR REPLACE WIRE AS REQUIRED.
NO
IS CABIN DOOR CHARGE LT OUT?
YES
REMOVE LT. CHECK FOR 28VDC BETWEEN LT RECEPTACLE TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE CABIN DOOR LT.
NO
NO
LOCATE OPEN IN WIRE W673-109-20 OR W673-107-20 BETWEEN LT RECEPTACLE AND SPLICE. REPAIR OR REPLACE WIRE AS REQUIRED.
REMOVE RAMP LT. CHECK FOR 28VDC BETWEEN LT RECEPTACLE TERM 2(+) AND GROUND. IS 28VDC PRESENT?
YES
REPLACE RAMP LT.
NO
LOCATE OPEN IN WIRE W666-93-20 OR W673-104-20 BETWEEN LT AND SPLICE. REPAIR OR REPLACE WIRE AS REQUIRED.

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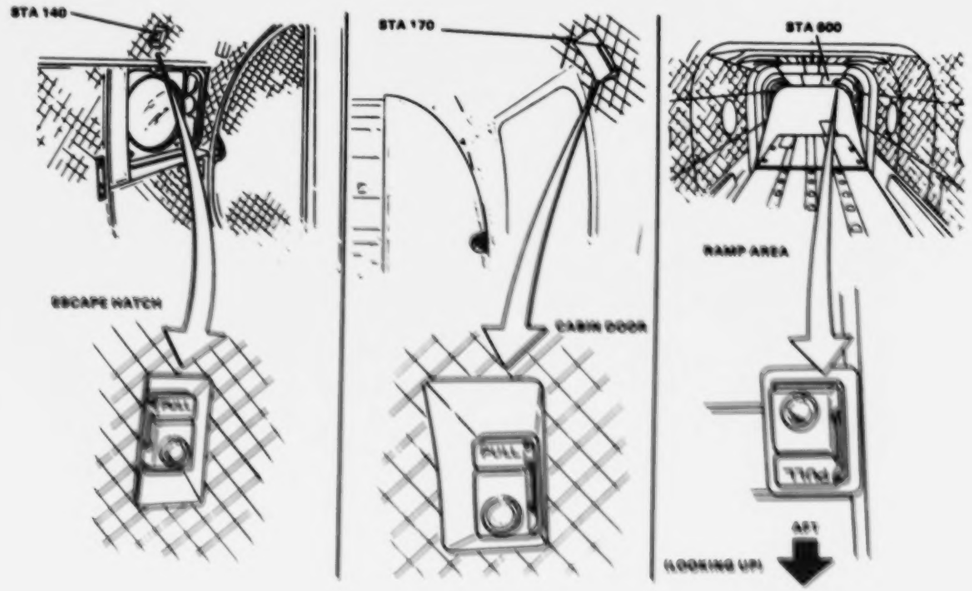

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By Order of the Secretary of the Army:

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Chief of Staff

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-1520-240-T-3	10 May 83	Troubleshooting, CH-47D Helicopter

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Change the manual to show 4 Cylenders.
B1		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the Other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered. so the NSN is Wrong. Please give me a good NSN

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C